



Prüfbericht-Nr.: Test report no.:	CN22HNTQ(LP0002-RFID) 001	Auftrags-Nr.: Order no.:	238521826	Seite 1 von 24 Page 1 of 24
Kunden-Referenz-Nr.: Client reference no.:	N/A	Auftragsdatum: Order date:	2021-10-29	
Auftraggeber: Client:	宜福門電子有限公司 ifm electronic Taiwan Ltd. 高雄市前鎮區復興四路 12 號 9 樓之 6			
Prüfgegenstand: Test item:	RFID read/write head HF			
Bezeichnung / Typ-Nr.: Identification / Type no.:	DTI424, DTI425, DTI434, DTI435			
Auftrags-Inhalt: Order content:	NCC LP0002 Test Report (RFID)			
Prüfgrundlage: Test specification:	NCC Low-power Radio-frequency Devices Technology Regulations LP0002 (2020) Section 4.2			
Wareneingangsdatum: Date of sample receipt:	2021-12-29			
Prüfmuster-Nr.: Test sample no.:	A003192420-006, 007 A003192420-009, 012			
Prüfzeitraum: Testing period:	2022-01-05 - 2022-02-14			
Ort der Prüfung: Place of testing:	EMC/RF Taipei Testing Site			
Prüflaboratorium: Testing laboratory:	Taipei Testing Laboratories			
Prüfergebnis*: Test result*:	Pass			
überprüft von: compiled by:			genehmigt von: authorized by:	
Datum: Date:	2022-02-17 Jack Wang		Ausstellungsdatum: Issue date:	2022-02-17 Brenda Chen
Stellung / Position:	Senior Project Engineer		Stellung / Position:	Senior Project Manager
Sonstiges / Other:				
Zustand des Prüfgegenstandes bei Anlieferung: Condition of the test item at delivery:				
Prüfmuster vollständig und unbeschädigt Test item complete and undamaged				
* Legende:	1 = sehr gut P(ass) = entspricht o.g. Prüfgrundlage(n)	2 = gut F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	3 = befriedigend F(ail) = entspricht nicht o.g. Prüfgrundlage(n)	4 = ausreichend N/A = nicht anwendbar
* Legend:	1 = very good P(ass) = passed a.m. test specification(s)	2 = good F(ail) = failed a.m. test specification(s)	3 = satisfactory F(ail) = failed a.m. test specification(s)	4 = sufficient N/A = not applicable
5 = mangelhaft N/T = nicht getestet				
5 = poor N/T = not tested				
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.				

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TEST SUMMARY

Report Section	NCC Clause	Test Item	Result
5.1.1	LP0002 3.2	Antenna Requirement	Pass
5.1.2	LP0002 4.2.1.1	Field Strength of Fundamental Emissions	Pass
5.1.3	LP0002 4.2.1.2	Radiated Spurious Emissions	Pass
5.1.4	LP0002 4.2.1.3	Frequency Stability	Pass
5.2.1	LP0002 3.3	Mains Conducted Emission	Pass

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

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Appendix A - Test Result of Radiated Emissions & Mains Conducted Emission Test

Appendix SP - Photographs of Test Setup

Appendix EP - Photographs of EUT

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HISTORY OF THIS TEST REPORT

Report No.	Description	Date Issued
CN22HNTQ(LP0002-RFID) 001	Original Release	2022-01-24

1. General Remarks

1.1 Complementary Materials

The following attachments are integral parts of this test report:

Appendix A - Test Result of Radiated Emissions & Mains Conducted Emission Test

Appendix SP - Photographs of Test Setup

Appendix EP - Photographs of EUT

Test Specifications

The following standards were applied.

Applied Standard and Test Levels

Radio
NCC Low-power Radio-frequency Devices Technical Regulations LP0002 (2020) (109 年 7 月 1 日)
ANSI C63.10:2013

1.2 Decision Rule of Conformity

The decision rule of conformity of this test report is following the requirements of the requested standard in the quotation, and agreed among testing laboratory and manufacturer (applicant) to exclude the consideration of Measurement Uncertainty, unless it is required by the specific standard.

2. Test Sites

2.1 Test Laboratory

Taipei Testing Laboratories

11F. No.758, Sec. 4, Bade Rd., Songshan Dist.
Taipei City 105
Taiwan (R.O.C.)

2.2 Test Facility

Taipei Testing Laboratories

No.458-18, Sec. 2, Fenliao Rd., Linkou Dist.,
New Taipei City 244
Taiwan (R.O.C.)
FCC Registration No.: 226631
ISED Registration No.: 25563

2.3 Traceability

All measurement equipment calibrations are traceable to NML(Taiwan)/NIST(USA) or where calibration is performed outside Taiwan, to equivalent nationally recognized standards organizations.

2.4 Calibration

Equipment requiring calibration is calibrated periodically in a suitably accredited Calibration Lab. Additionally all equipment is verified for proper performance on a regular basis using in house standards or comparisons.

2.5 Measurement Uncertainty

All measurement uncertainty values are shown with a coverage factor of $k=2$ to indicate a 95% level of confidence.

Emission Measurement Uncertainty

Parameter	Uncertainty
Radiated Emission (9 kHz ~ 30 MHz)	± 1.15 dB
Radiated Emission (30 MHz ~ 200 MHz)	± 1.32 dB
Radiated Emission (200 MHz ~ 1 GHz)	± 1.31 dB
Mains Conducted Emission	± 1.65 dB

3. General Product Information

3.1 Product Function and Intended Use

The EUT is a RFID read/write head HF working at 13.56 MHz with RFID function.
 For details refer to the User Guide, Data Sheet and Circuit Diagram.

3.2 System Details and Ratings

Basic Information of EUT

Item	EUT information
Kind of Equipment/Test Item	RFID read/write head HF
Type Identification	DTI424, DTI425, DTI434, DTI435
Brand Name	ifm

Technical Specification of EUT

Item	EUT information
Operating Frequency	13.56 MHz
Operation Voltage	24Vdc
Modulation	ASK
Field Strength	DTI424: 51.44 (dBuV/m) @ 3m DTI425: 57.17 (dBuV/m) @ 3m DTI434: 51.55 (dBuV/m) @ 3m DTI435: 59.06 (dBuV/m) @ 3m
Antenna Information	Refer to 5.1.1
Accessory Device	Refer to 4.3

Note:

- All models are listed as below.

NO.	Type	Type Identification	Difference	
A	Main	DTI424	The only difference is with Flush mountable or not.	M18 Flush mountable, IO Link, read range $\leq$ 16mm (30mm coin tag).
B	Series	DTI425		M18, Non-Flush mountable, IO Link, read range $\leq$ 40mm (30mm coin tag).
C		DTI434		M30 Flush mountable, IO Link, read range $\leq$ 30mm (30mm coin tag).
D		DTI435		M30, Non-Flush mountable, IO Link, read range $\leq$ 45mm (30mm coin tag).

3.3 Noise Generating and Noise Suppressing Parts

Refer to the Circuit Diagram.

3.4 Submitted Documents

- Circuit Diagram
- Instruction Manual
- Rating Label
- Technical Description

4. Test Set-up and Operation Modes

4.1 Principle of Configuration Selection

The equipment under test (EUT) was configured to measure its maximum emission level.
The test modes were adapted accordingly in reference to the instructions for use.

4.2 Test Operation and Test Software

Setup for testing: The EUT has a modified firmware installed which makes it possible to read data from the RFID reader continually. The RFID reader is permanently on.

Test Software	None.
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The samples were used as follows:

A003192420-006 (DTI424), A003192420-007 (DTI425), A003192420-009 (DTI434), A003192420-012 (DTI435) for radiated and conducted tests

Full test was applied on all test modes, but only worst case was shown.

EUT Configure Mode	Applicable To				Description
	Field Strength of Fundamental Emissions	Radiated Spurious Emissions	Frequency Stability	Mains Conducted Emission	
A	√	√	√	√	-
B	√	√	√	√	-
C	√	√	√	√	-
D	√	√	√	√	-

Note:

- The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when position on Z-plane.
- "-" means no effect.

Field Strength of Fundamental Emissions

- ☒ Pre-Scan full test was applied on all test modes, but only worst case was shown.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Frequency (MHz)	Tested Frequency (MHz)
A, B, C, D	13.56	13.56

Radiated Spurious Emissions

- ☒ Pre-Scan full test was applied on all test modes, but only worst case was shown.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Frequency (MHz)	Tested Frequency (MHz)
Tx / Rx		
A, B, C, D	13.56	13.56

Frequency Stability

- ☒ Pre-Scan full test was applied on all test modes, but only worst case was shown.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Frequency (MHz)	Tested Frequency (MHz)
A, B, C, D	13.56	13.56

Mains Conducted Emission

- ☒ Pre-Scan full test was applied on all test modes, but only worst case was shown.
- ☒ Following channel(s) was (were) selected for the final test as listed below.

EUT Configure Mode	Available Frequency (MHz)	Tested Frequency (MHz)
A, B, C, D	13.56	13.56

Test Condition

Test Item	Ambient Temperature	Relative Humidity	Tested by
Field Strength of Fundamental Emissions	23.9-25.2 °C	53.4-55.6 %	Ivan Chiang
Radiated Spurious Emissions	23.9-25.2 °C	53.4-55.6 %	Ivan Chiang
Frequency Stability	16-22 °C	57-66 %	Blake Wang
Mains Conducted Emission	20.1-20.9 °C	53-57 %	Hunter Wang

4.3 Special Accessories and Auxiliary Equipment

The product has been tested together with the following additional accessories:

Accessory of EUT

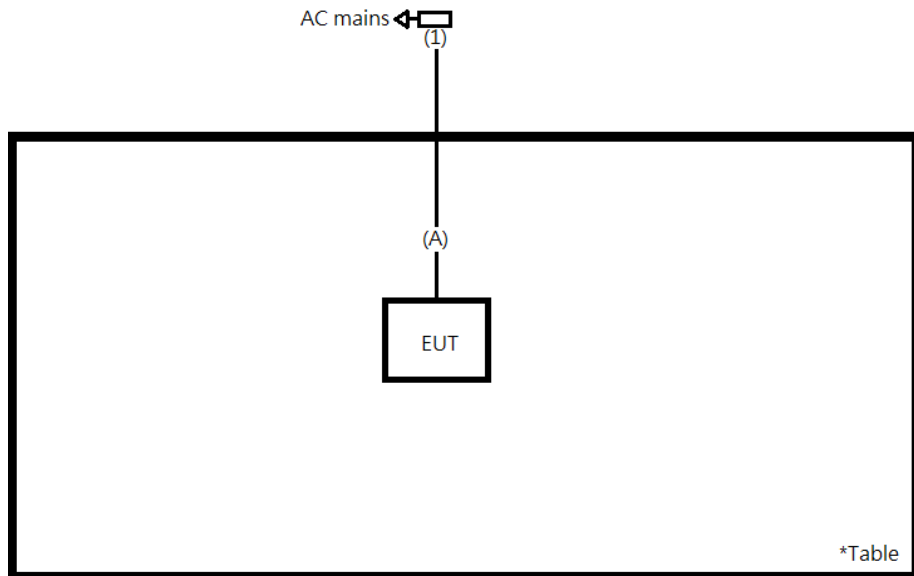
None.

Support Unit

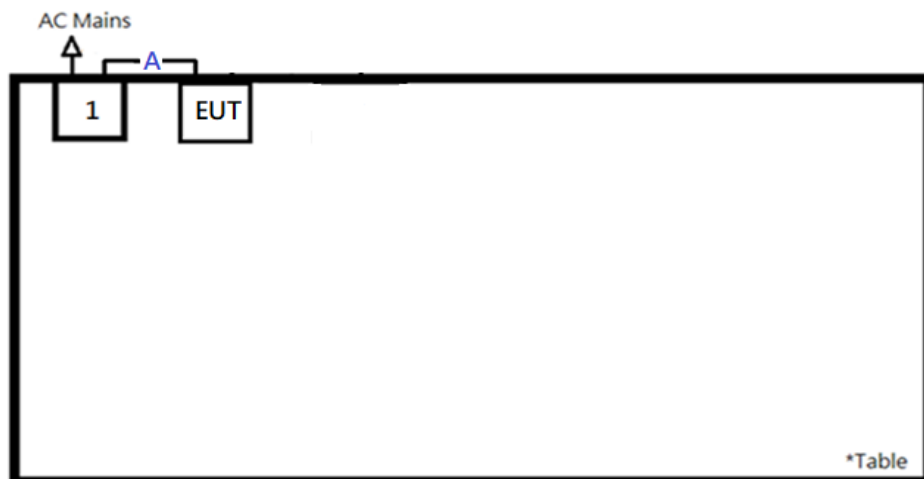
No.	Description	Brand	Model	S/N	Remark
Radiated Test					
A	Cable with socket	ifm	ifm-001	-	200 cm
1	Power Supply	Gwinstek	GPC-3030DQ	-	150 cm non-shielded cable w/o core
Conduction Test					
A	Cable with socket	ifm	ifm-001	-	200 cm
1	Power Supply	Gwinstek	GPC-3030DQ	-	178 cm non-shielded cable w/o core

4.4 Test Setup Diagram

<Radiated Spurious Emissions>



<Mains Conducted Emission mode>



5. Test Results

5.1 Transmitter Requirement & Test Suites

5.1.1 Antenna Requirement

Requirement Use of approved antennas only

According to the manufacturer declaration, the antenna information is as listed below. The antenna is with no possibility of replacement with a non-approved antenna by the end-user. Therefore, the EUT is considered to comply with this provision.

EUT Model No.	Brand Name	Antenna Model No.	Antenna Type
DTI424	ifm	150532	Loop Antenna
DTI425			
DTI434		150527	
DTI435			

Refer to EUT photo for details.

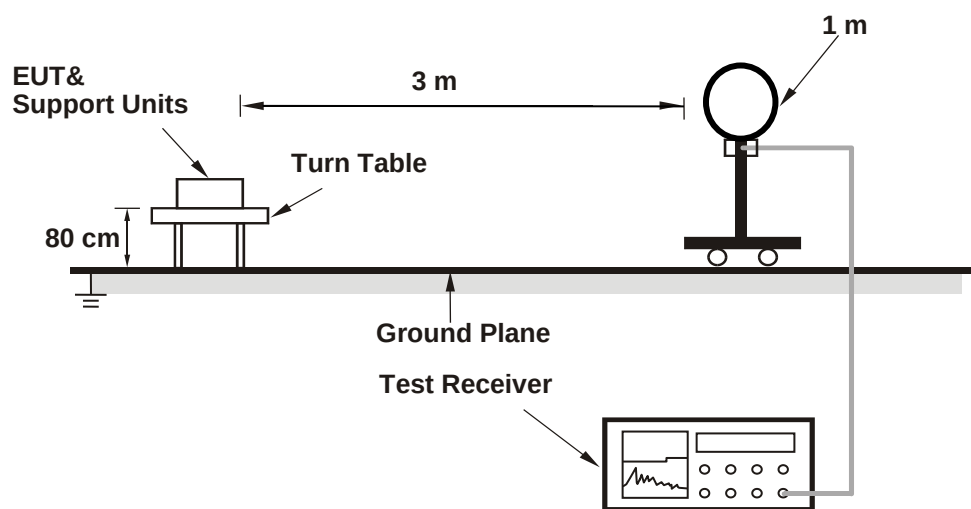
5.1.2 Field Strength of Fundamental Emissions

Limit

The field strength of any emissions within the band 13.553-13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters.

Kind of Test Site 3m Semi-Anechoic Chamber

Test Setup



For the actual test configuration, please refer to the attached file (Test Setup Photo).

Test Instruments

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date
Signal Analyzer	R&S	FSV40	101508	2021/3/16	2022/3/15
Receiver	R&S	ESR7	102109	2021/3/16	2022/3/15
Bilog Antenna	SCHWARZBECK	VULB-9168	00951	2021/2/18	2022/2/17
Horn Antenna	ETS-Lindgren	3117	00218929	2021/11/25	2022/11/24
LF-AMP	Agilent	8447D	2944A10772	2021/2/18	2022/2/17
HF-AMP + AC source	EMCI	EMC051845SE	980633	2021/2/9	2022/2/8
HF-AMP + AC source	EMCI	EMC184045SE	980657	2021/2/1	2022/1/31
Horn Antenna	SCHWARZBECK	BBHA 9170	00887	2021/4/8	2022/4/7
Microwave Cable	HUBER+SUHNER	SUCOFLEX 104EA	800056/4EA	2021/3/17	2022/3/16
Microwave Cable	HUBER+SUHNER	SUCOFLEX 104	804680/4	2021/3/17	2022/3/16
Microwave Cable	HUBER+SUHNER	SUCOFLEX 104	MY37202/4	2021/3/17	2022/3/16
Microwave Cable	HUBER+SUHNER	SUCOFLEX 102EA	800898/2EA	2021/4/16	2022/4/15
Microwave Cable	HUBER+SUHNER	SUCOFLEX 102EA	800901/2EA	2021/4/16	2022/4/15
Microwave Cable	HUBER+SUHNER	SUCOFLEX 102EA	801027/2EA	2021/4/16	2022/4/15
Loop Antenna	SCHWARZBECK	FMZB 1519B	00215	2021/12/8	2022/12/7

Test Procedures

- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

Note:

- The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz at frequency below 30 MHz.
- The calculation formula is explained as follows:
 Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB)
 Level (dBuV/m) = Reading (dBuV) + Factor (dB/m)
 Limit at 30m = 15848 (uV/m)
 **Limit at 3m = $20 \cdot \log(15848) + 40 \log(30\text{m}/3\text{m})$ (dBuV/m)
 = 84+40 (dBuV/m)
 = 124 (dBuV/m)

Test Results

Please refer to Appendix A.

5.1.3 Radiated Spurious Emissions

Limit

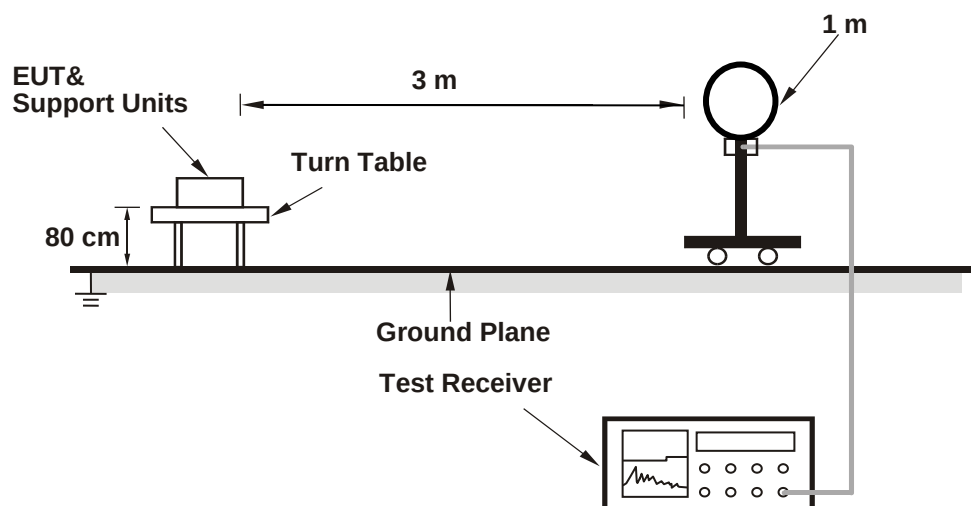
Radiated emissions which fall in the restricted bands, as defined in LP0002 (2020): 3.5, must comply with the radiated emission limits specified in LP0002 (2020): 3.6.

Emissions radiated outside the specified frequency bands must comply with the radiated emission limits specified in LP0002 (2020): 3.6.

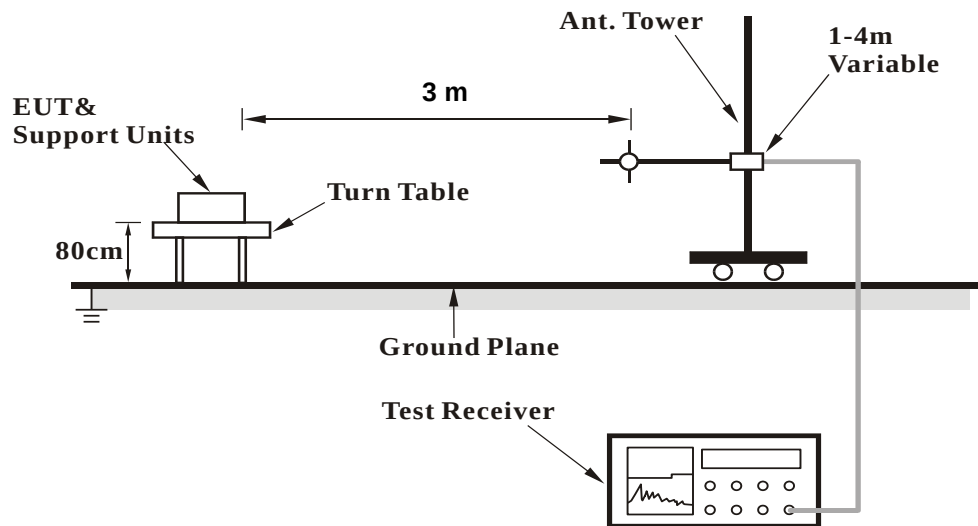
Kind of Test Site 3m Semi-Anechoic Chamber

Test Setup

<Radiated Emissions below 30 MHz>



<Radiated Emissions 30 MHz to 1 GHz>



For the actual test configuration, please refer to the attached file (Test Setup Photo).

Test Instruments

Please refer to 5.1.2 Instruments

Test Procedures**For Radiated Emissions below 30 MHz**

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Parallel (OPEN), perpendicular (CLOSE), and ground-parallel (GROUND) orientations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz at frequency below 30 MHz.
2. All modes of operation were investigated and the worst-case emissions are reported.

For Radiated Emissions above 30 MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters (for 30 MHz ~ 1 GHz) / 1.5 meters (for above 1 GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detected function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) or Peak detection (PK) at frequency below 1 GHz.
2. All modes of operation were investigated and the worst-case emissions are reported.
3. The Radiated Emissions testing was performed in the X(E1), Y(H) and Z(E2) axis orientation. The worst-case Axis orientation is recorded in this test report.
4. The calculation formula is explained as follows:
Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB)
Level (dBuV/m) = Reading (dBuV) + Factor (dB/m)

Test Results

Please refer to Appendix A.

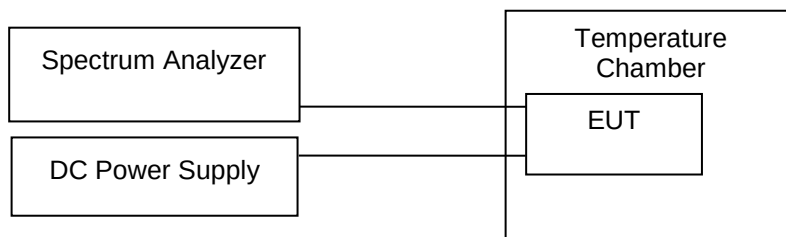
5.1.4 Frequency Stability

Limit

The frequency tolerance of the carrier signal shall be maintained within +/- 0.01 % of the operating frequency over a temperature variation of -20 degrees to 50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85 % to 115 % of the rated supply voltage at a temperature of 20 degrees C.

Kind of Test Site Shielded room

Test Setup



Test Instruments

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date	Test Date	
						From	Until
Spectrum Analyzer	R&S	FSV40	101512	2021/01/29	2022/01/28	2022/01/10	2022/01/11
Thermal Chamber	Giant Force	GHT-150-40-CP-SD	MAA1902-011	2021/03/04	2022/03/03	2022/01/10	2022/01/11

Test Procedures

- The EUT was placed inside the environmental test chamber and powered by nominal DC voltage.
- Turned the EUT on and coupled its output to a spectrum analyzer.
- Turned the EUT off and set the chamber to the highest temperature specified.
- Allowed sufficient time (approximately 30 min) for the temperature of the chamber to stabilize then turned the EUT on and measured the operating frequency after 2, 5, and 10 minutes.
- Repeated step b and c with the temperature chamber set to the lowest temperature.
- The test chamber was allowed to stabilize at +20 degree C for a minimum of 30 minutes. The supply voltage was then adjusted on the EUT from 85 % to 115 % and the frequency record.

Frequency (MHz)		13.56							
Condition		Test Time				Frequency Error (ppm)			
Extreme	Modulation Mode	0 min	2 min	5 min	10 min	0 min	2 min	5 min	10 min
T _{20°C} V _{max}	CW	13.56058	13.56058	13.56058	13.56058	42.77	42.77	42.77	42.77
T _{20°C} V _{min}	CW	13.56058	13.56058	13.56058	13.56058	42.77	42.77	42.77	42.77
T _{50°C} V _{nom}	CW	13.56058	13.56058	13.56058	13.56058	42.77	42.77	42.77	42.77
T _{40°C} V _{nom}	CW	13.56058	13.56058	13.56058	13.56058	42.77	42.77	42.77	42.77
T _{30°C} V _{nom}	CW	13.56058	13.56058	13.56058	13.56058	42.77	42.77	42.77	42.77
T _{20°C} V _{nom}	CW	13.56058	13.56058	13.56058	13.56058	42.77	42.77	42.77	42.77
T _{10°C} V _{nom}	CW	13.56058	13.56058	13.56058	13.56058	42.77	42.77	42.77	42.77
T _{0°C} V _{nom}	CW	13.56058	13.56058	13.56058	13.56058	42.77	42.77	42.77	42.77
T _{-10°C} V _{nom}	CW	13.56058	13.56058	13.56058	13.56058	42.77	42.77	42.77	42.77
T _{-20°C} V _{nom}	CW	13.56058	13.56058	13.56058	13.56058	42.77	42.77	42.77	42.77
Limit (ppm)		-				±100			
Result		Pass							

Frequency (MHz)		13.56							
Condition		Test Time				Frequency Error (ppm)			
Extreme	Modulation Mode	0 min	2 min	5 min	10 min	0 min	2 min	5 min	10 min
T _{20°C} V _{max}	CW	13.56058	13.56058	13.56058	13.56058	42.77	42.77	42.77	42.77
T _{20°C} V _{min}	CW	13.56058	13.56058	13.56058	13.56058	42.77	42.77	42.77	42.77
T _{50°C} V _{nom}	CW	13.56058	13.56058	13.56058	13.56058	42.77	42.77	42.77	42.77
T _{40°C} V _{nom}	CW	13.56058	13.56058	13.56058	13.56058	42.77	42.77	42.77	42.77
T _{30°C} V _{nom}	CW	13.56058	13.56058	13.56058	13.56058	42.77	42.77	42.77	42.77
T _{20°C} V _{nom}	CW	13.56058	13.56058	13.56058	13.56058	42.77	42.77	42.77	42.77
T _{10°C} V _{nom}	CW	13.56058	13.56058	13.56058	13.56058	42.77	42.77	42.77	42.77
T _{0°C} V _{nom}	CW	13.56058	13.56058	13.56058	13.56058	42.77	42.77	42.77	42.77
T _{-10°C} V _{nom}	CW	13.56058	13.56058	13.56058	13.56058	42.77	42.77	42.77	42.77
T _{-20°C} V _{nom}	CW	13.56058	13.56058	13.56058	13.56058	42.77	42.77	42.77	42.77
Limit (ppm)		-				±100			
Result		Pass							

5.2 Mains Emission

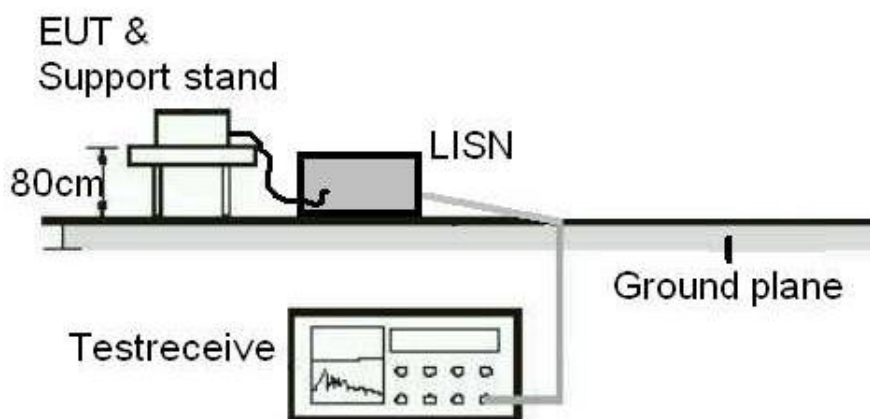
5.2.1 Mains Conducted Emission

Limit

Mains Conducted emission as defined in LP0002 standard must comply with the mains conducted emission limits.

Kind of Test Site Shielded room

Test Setup



Test Instruments

Kind of Equipment	Manufacturer	Type	S/N	Calibration Date	Calibration Due Date
RF Cable	N/A	N/A	EMC-003	2021/3/16	2022/3/15
Two-Line V-Network	Rohde & Schwarz	ENV216	101938	2021/9/23	2022/9/22
EMI Test Receiver	R&S	ESCI	1816063	2021/11/15	2022/11/14

Test Procedures

- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/50 uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150 kHz to 30 MHz was searched. Emission levels under (Limit – 20 dB) was not recorded.

Note: The resolution bandwidth and video bandwidth of test receiver is 9 kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15 MHz – 30 MHz.

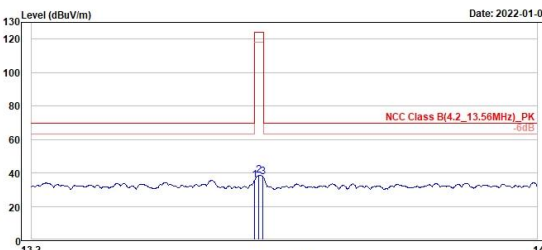
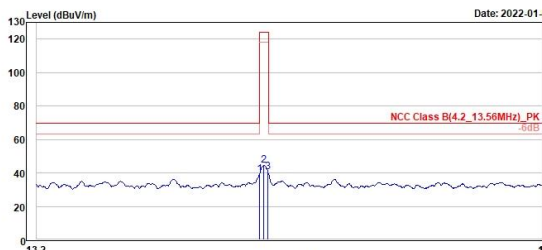
Test Results

Please refer to Appendix A.

Appendix A: Test Results of Radiated Spurious Emissions & Mains

Conducted Emission Test _ DTI424

Fundamental

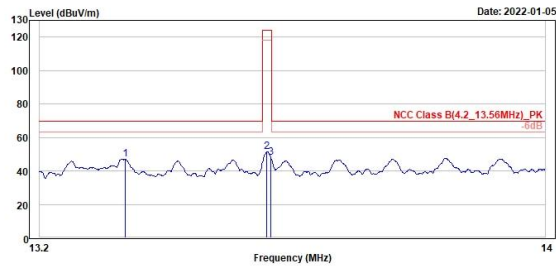
RFID																																																																																																																																		
Grounding						(Open)																																																																																																																												
 TUV Rheinland Taiwan Ltd. No. 458-18, Sec. 2, Fenliao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.) Tel: +886-2172-1000 Fax: +886-2172-1322						 TUV Rheinland Taiwan Ltd. No. 458-18, Sec. 2, Fenliao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.) Tel: +886-2172-1000 Fax: +886-2172-1322																																																																																																																												
Level (dBuV/m) Date: 2022-01-05  Frequency (MHz)						Level (dBuV/m) Date: 2022-01-05  Frequency (MHz)																																																																																																																												
<table><tr><th></th><th>Freq</th><th>Level</th><th>Read</th><th>Level</th><th>Factor</th><th>Limit</th><th>Over</th><th>APos</th><th>TPos</th><th>Remark</th><th>Pol/Phase</th></tr><tr><th></th><th>MHz</th><th>dBuV/m</th><th>dBuV</th><th>dB/m</th><th>dBuV/m</th><th>dB</th><th>dB</th><th>cm</th><th>deg</th><th></th><th></th></tr><tr><td>1</td><td>13.55</td><td>35.61</td><td>13.86</td><td>21.75</td><td>69.50</td><td>-33.89</td><td>100</td><td>128</td><td>Q⁰</td><td>Ground</td><td></td></tr><tr><td>2</td><td>13.56</td><td>38.77</td><td>17.02</td><td>21.75</td><td>124.00</td><td>-85.23</td><td>100</td><td>109</td><td>Peak</td><td>Ground</td><td></td></tr><tr><td>3</td><td>13.57</td><td>37.45</td><td>15.70</td><td>21.75</td><td>124.00</td><td>-86.55</td><td>100</td><td>109</td><td>Q⁰</td><td>Ground</td><td></td></tr></table>							Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase		MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	dB	cm	deg			1	13.55	35.61	13.86	21.75	69.50	-33.89	100	128	Q ⁰	Ground		2	13.56	38.77	17.02	21.75	124.00	-85.23	100	109	Peak	Ground		3	13.57	37.45	15.70	21.75	124.00	-86.55	100	109	Q ⁰	Ground		<table><tr><th></th><th>Freq</th><th>Level</th><th>Read</th><th>Level</th><th>Factor</th><th>Limit</th><th>Over</th><th>APos</th><th>TPos</th><th>Remark</th><th>Pol/Phase</th></tr><tr><th></th><th>MHz</th><th>dBuV/m</th><th>dBuV</th><th>dB/m</th><th>dBuV/m</th><th>dB</th><th>dB</th><th>cm</th><th>deg</th><th></th><th></th></tr><tr><td>1</td><td>13.55</td><td>38.93</td><td>17.18</td><td>21.75</td><td>69.50</td><td>-30.57</td><td>100</td><td>241</td><td>Q⁰</td><td>Open</td><td></td></tr><tr><td>2</td><td>13.56</td><td>44.42</td><td>22.67</td><td>21.75</td><td>124.00</td><td>-79.58</td><td>100</td><td>241</td><td>Peak</td><td>Open</td><td></td></tr><tr><td>3</td><td>13.57</td><td>40.46</td><td>18.71</td><td>21.75</td><td>124.00</td><td>-83.54</td><td>100</td><td>241</td><td>Q⁰</td><td>Open</td><td></td></tr></table>						Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase		MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	dB	cm	deg			1	13.55	38.93	17.18	21.75	69.50	-30.57	100	241	Q ⁰	Open		2	13.56	44.42	22.67	21.75	124.00	-79.58	100	241	Peak	Open		3	13.57	40.46	18.71	21.75	124.00	-83.54	100	241	Q ⁰	Open	
	Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase																																																																																																																							
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	dB	cm	deg																																																																																																																									
1	13.55	35.61	13.86	21.75	69.50	-33.89	100	128	Q ⁰	Ground																																																																																																																								
2	13.56	38.77	17.02	21.75	124.00	-85.23	100	109	Peak	Ground																																																																																																																								
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2	13.56	44.42	22.67	21.75	124.00	-79.58	100	241	Peak	Open																																																																																																																								
3	13.57	40.46	18.71	21.75	124.00	-83.54	100	241	Q ⁰	Open																																																																																																																								

RFID

(Close)

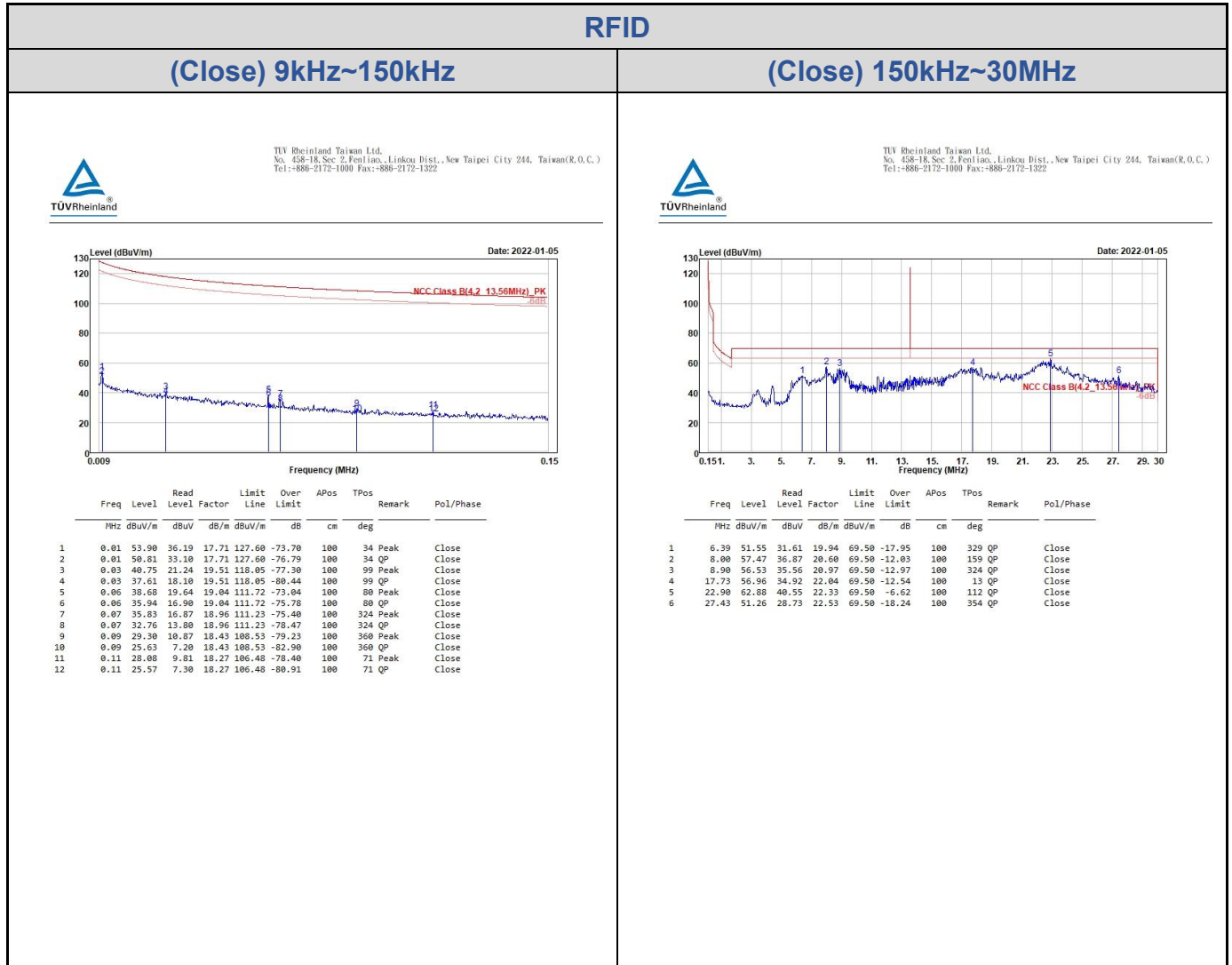


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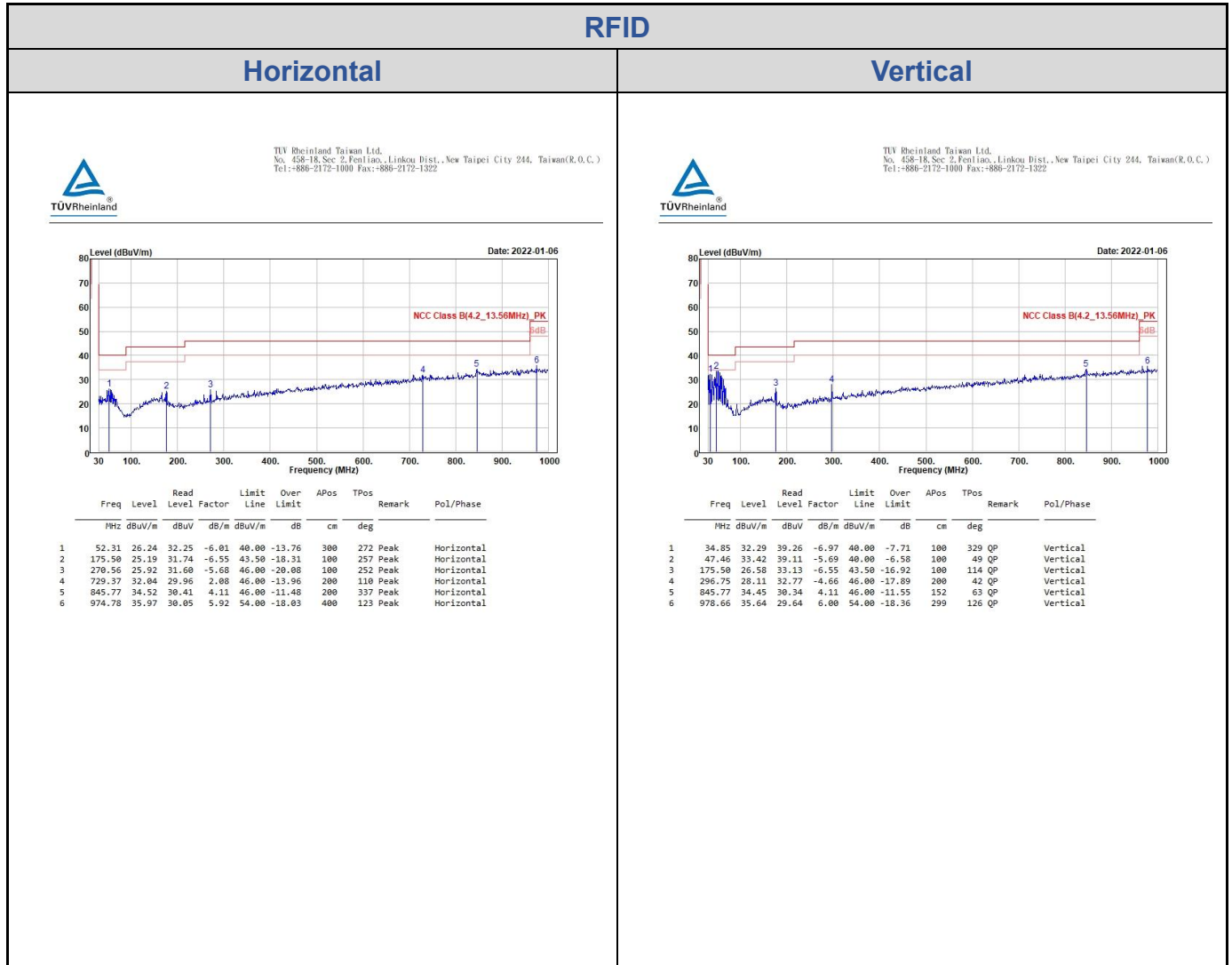


	Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase
	MHz	dBuV/m	Factor	Line	Limit	cm	deg		
1	13.34	47.15	25.42	21.73	69.58	-22.35	100	267 QP	Close
2	13.56	51.44	29.69	21.75	124.00	-72.56	100	35 Peak	Close
3	13.57	47.77	26.02	21.75	124.00	-76.23	100	144 QP	Close

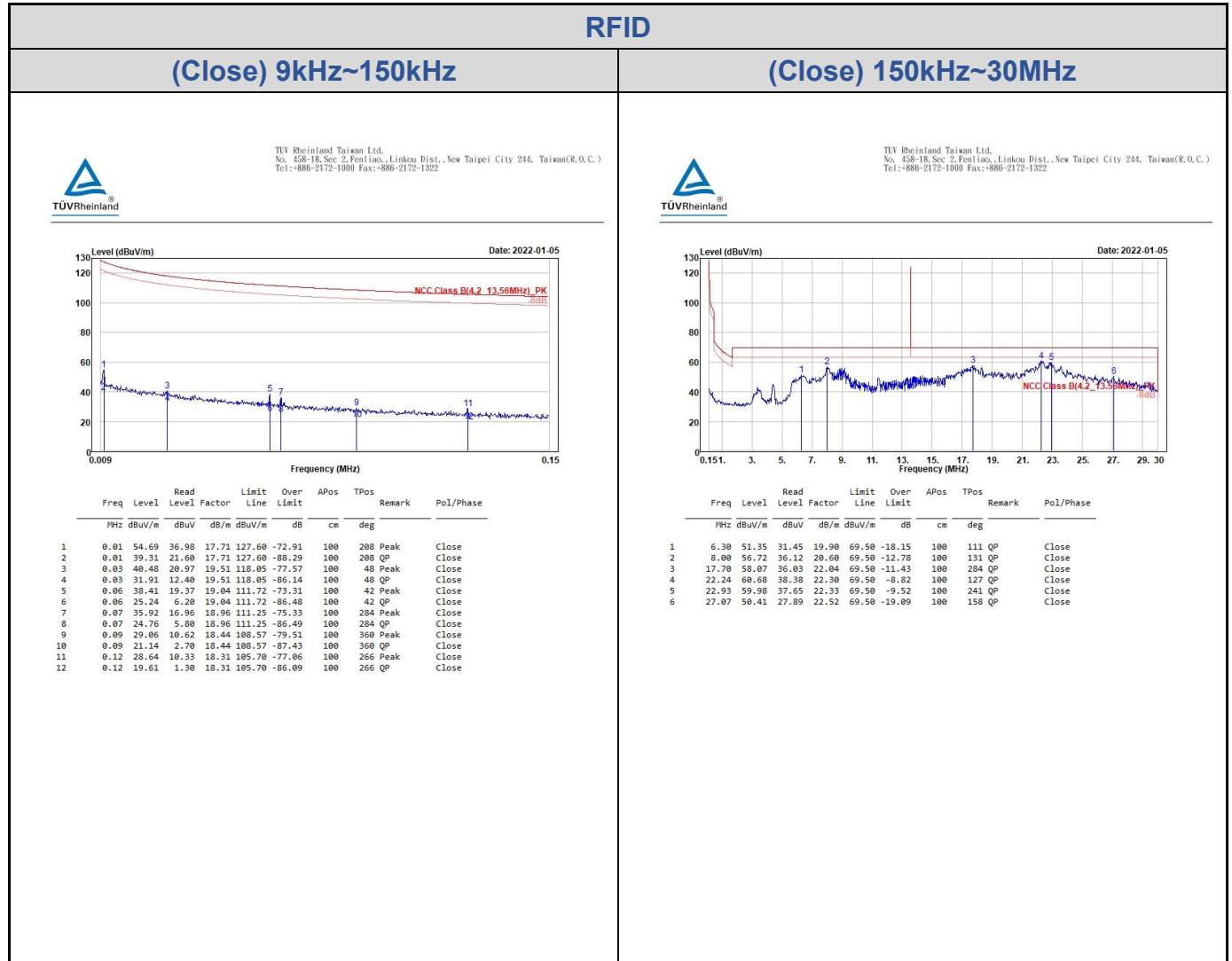
Tx Mode, 9kHz ~ 30MHz



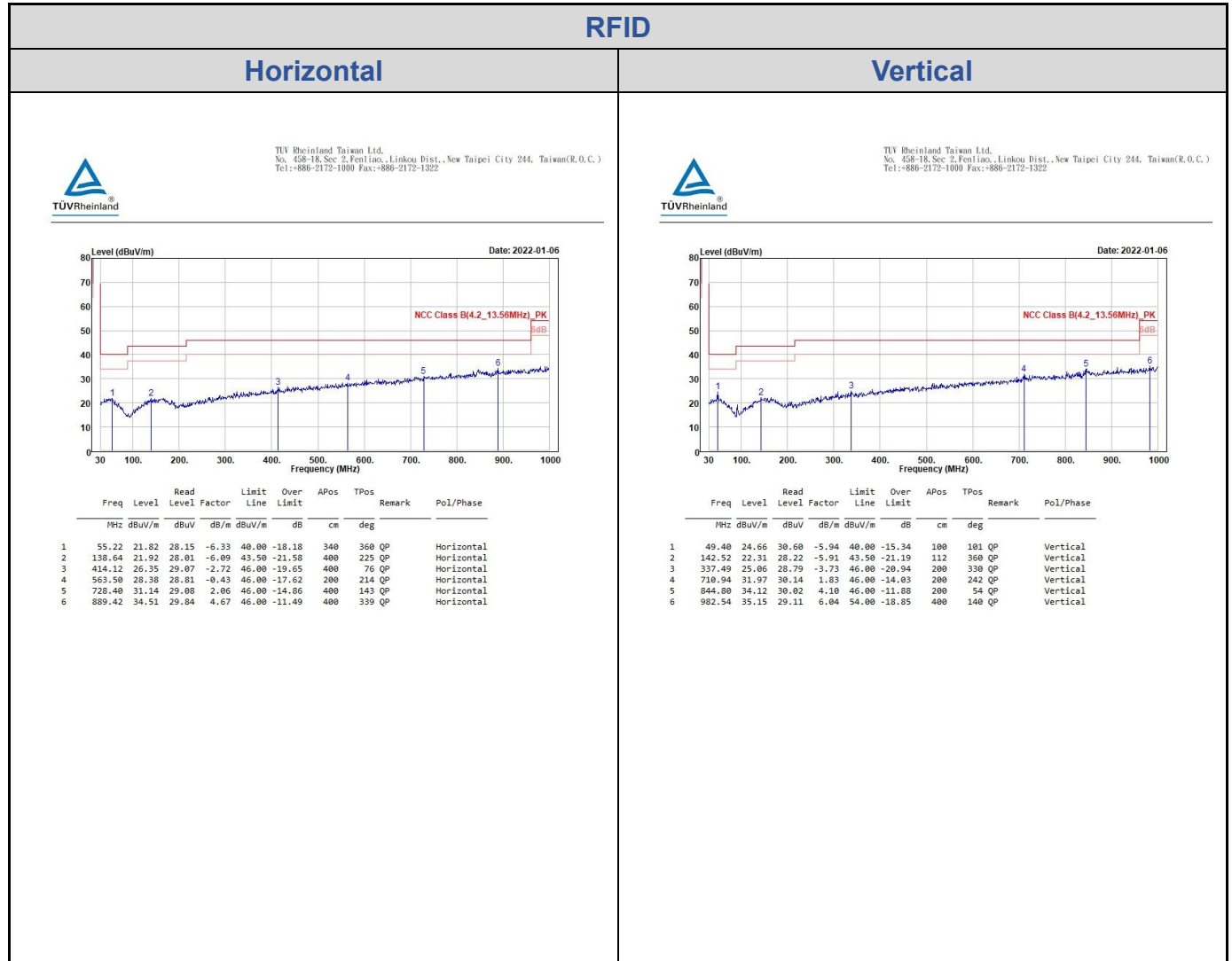
Tx Mode, 30MHz ~ 1GHz



Rx Mode, 9kHz ~ 30MHz



Rx Mode, 30MHz ~ 1GHz



Mains Conducted Emission, 150kHz ~ 30MHz

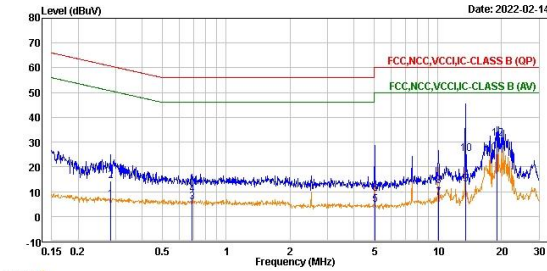
Worst Band

(Line)

(Neutral)



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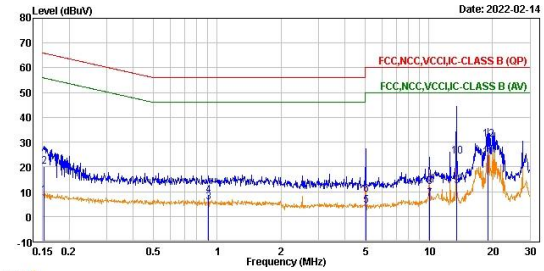


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	Freq	Level	Read	Limit	Over		
	MHz	dBuV	Level Factor	Line	Limit	Remark	Pol/Phase Note
	MHz	dBuV	dB	dBuV	dB		
1	0.28	6.76	-2.91	9.67	50.70	-43.94 Average	line1
2	0.28	14.20	4.53	9.67	60.70	-46.50 QP	line1
3	0.69	5.73	-3.96	9.69	46.00	-40.27 Average	line1
4	0.69	8.74	-0.95	9.69	56.00	-47.26 QP	line1
5	5.04	4.72	-5.04	9.76	50.00	-45.28 Average	line1
6	5.04	9.21	-0.55	9.76	60.00	-50.79 QP	line1
7	10.07	7.61	-2.20	9.81	50.00	-42.39 Average	line1
8	10.07	12.41	2.60	9.81	60.00	-47.59 QP	line1
9	13.51	12.89	3.08	9.81	50.00	-37.11 Average	line1
10	13.51	25.16	15.35	9.81	60.00	-34.84 QP	line1
11	18.97	26.01	16.20	9.81	50.00	-23.99 Average	line1
12	18.97	31.53	21.72	9.81	60.00	-28.47 QP	line1



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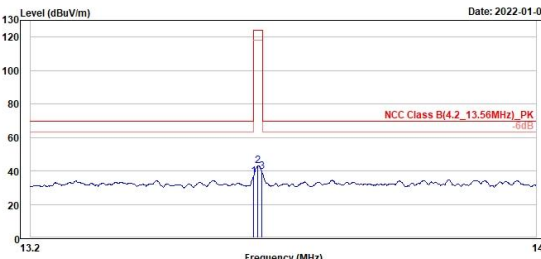
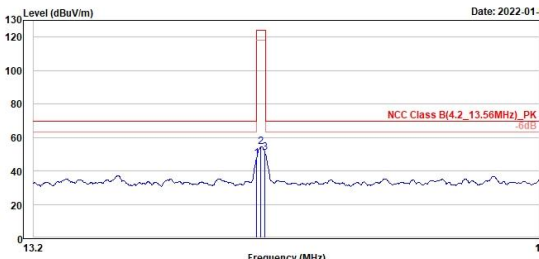
Trace: 1

	Freq	Level	Read	Limit	Over		
	MHz	dBuV	Level Factor	Line	Limit	Remark	Pol/Phase Note
	MHz	dBuV	dB	dBuV	dB		
1	0.15	8.56	-1.11	9.67	55.92	-47.36 Average	neutral
2	0.15	20.08	10.41	9.67	65.92	-45.84 QP	neutral
3	0.91	5.66	-4.00	9.66	46.00	-40.34 Average	neutral
4	0.91	8.63	-1.03	9.66	56.00	-47.37 QP	neutral
5	5.04	4.37	-5.37	9.74	50.00	-45.63 Average	neutral
6	5.04	8.96	-0.78	9.74	60.00	-51.04 QP	neutral
7	10.07	7.08	-2.71	9.79	50.00	-42.92 Average	neutral
8	10.07	12.02	2.23	9.79	60.00	-47.98 QP	neutral
9	13.51	12.36	2.53	9.83	50.00	-37.64 Average	neutral
10	13.51	24.34	14.51	9.83	60.00	-35.66 QP	neutral
11	18.97	23.80	13.93	9.87	50.00	-26.20 Average	neutral
12	18.97	31.03	21.16	9.87	60.00	-28.97 QP	neutral

Test Results of Radiated Spurious Emissions & Mains Conducted

Emission Test _ DTI425

Fundamental

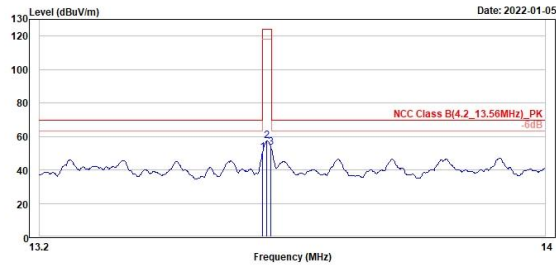
RFID																																																																																																																																		
Grounding						(Open)																																																																																																																												
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<table><tr><th></th><th>Freq</th><th>Level</th><th>Read</th><th>Level</th><th>Factor</th><th>Limit</th><th>Over</th><th>APos</th><th>TPos</th><th>Remark</th><th>Pol/Phase</th></tr><tr><th></th><th>MHz</th><th>dBuV/m</th><th>dBuV</th><th>dB/m</th><th>dBuV/m</th><th>dB</th><th>dB</th><th>cm</th><th>deg</th><th></th><th></th></tr><tr><td>1</td><td>13.55</td><td>36.77</td><td>15.02</td><td>21.75</td><td>69.50</td><td>-32.73</td><td>100</td><td>233</td><td>Q⁰</td><td>Ground</td><td></td></tr><tr><td>2</td><td>13.56</td><td>43.12</td><td>21.37</td><td>21.75</td><td>124.00</td><td>-80.88</td><td>100</td><td>221</td><td>Peak</td><td>Ground</td><td></td></tr><tr><td>3</td><td>13.57</td><td>39.46</td><td>17.71</td><td>21.75</td><td>124.00</td><td>-84.54</td><td>100</td><td>234</td><td>Q⁰</td><td>Ground</td><td></td></tr></table>							Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase		MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	dB	cm	deg			1	13.55	36.77	15.02	21.75	69.50	-32.73	100	233	Q ⁰	Ground		2	13.56	43.12	21.37	21.75	124.00	-80.88	100	221	Peak	Ground		3	13.57	39.46	17.71	21.75	124.00	-84.54	100	234	Q ⁰	Ground		<table><tr><th></th><th>Freq</th><th>Level</th><th>Read</th><th>Level</th><th>Factor</th><th>Limit</th><th>Over</th><th>APos</th><th>TPos</th><th>Remark</th><th>Pol/Phase</th></tr><tr><th></th><th>MHz</th><th>dBuV/m</th><th>dBuV</th><th>dB/m</th><th>dBuV/m</th><th>dB</th><th>dB</th><th>cm</th><th>deg</th><th></th><th></th></tr><tr><td>1</td><td>13.55</td><td>47.43</td><td>25.68</td><td>21.75</td><td>69.50</td><td>-22.07</td><td>100</td><td>2</td><td>Q⁰</td><td>Open</td><td></td></tr><tr><td>2</td><td>13.56</td><td>54.52</td><td>32.77</td><td>21.75</td><td>124.00</td><td>-69.48</td><td>100</td><td>216</td><td>Peak</td><td>Open</td><td></td></tr><tr><td>3</td><td>13.57</td><td>50.80</td><td>29.05</td><td>21.75</td><td>124.00</td><td>-73.20</td><td>100</td><td>216</td><td>Q⁰</td><td>Open</td><td></td></tr></table>						Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase		MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	dB	cm	deg			1	13.55	47.43	25.68	21.75	69.50	-22.07	100	2	Q ⁰	Open		2	13.56	54.52	32.77	21.75	124.00	-69.48	100	216	Peak	Open		3	13.57	50.80	29.05	21.75	124.00	-73.20	100	216	Q ⁰	Open	
	Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase																																																																																																																							
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	dB	cm	deg																																																																																																																									
1	13.55	36.77	15.02	21.75	69.50	-32.73	100	233	Q ⁰	Ground																																																																																																																								
2	13.56	43.12	21.37	21.75	124.00	-80.88	100	221	Peak	Ground																																																																																																																								
3	13.57	39.46	17.71	21.75	124.00	-84.54	100	234	Q ⁰	Ground																																																																																																																								
	Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase																																																																																																																							
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	dB	cm	deg																																																																																																																									
1	13.55	47.43	25.68	21.75	69.50	-22.07	100	2	Q ⁰	Open																																																																																																																								
2	13.56	54.52	32.77	21.75	124.00	-69.48	100	216	Peak	Open																																																																																																																								
3	13.57	50.80	29.05	21.75	124.00	-73.20	100	216	Q ⁰	Open																																																																																																																								

RFID

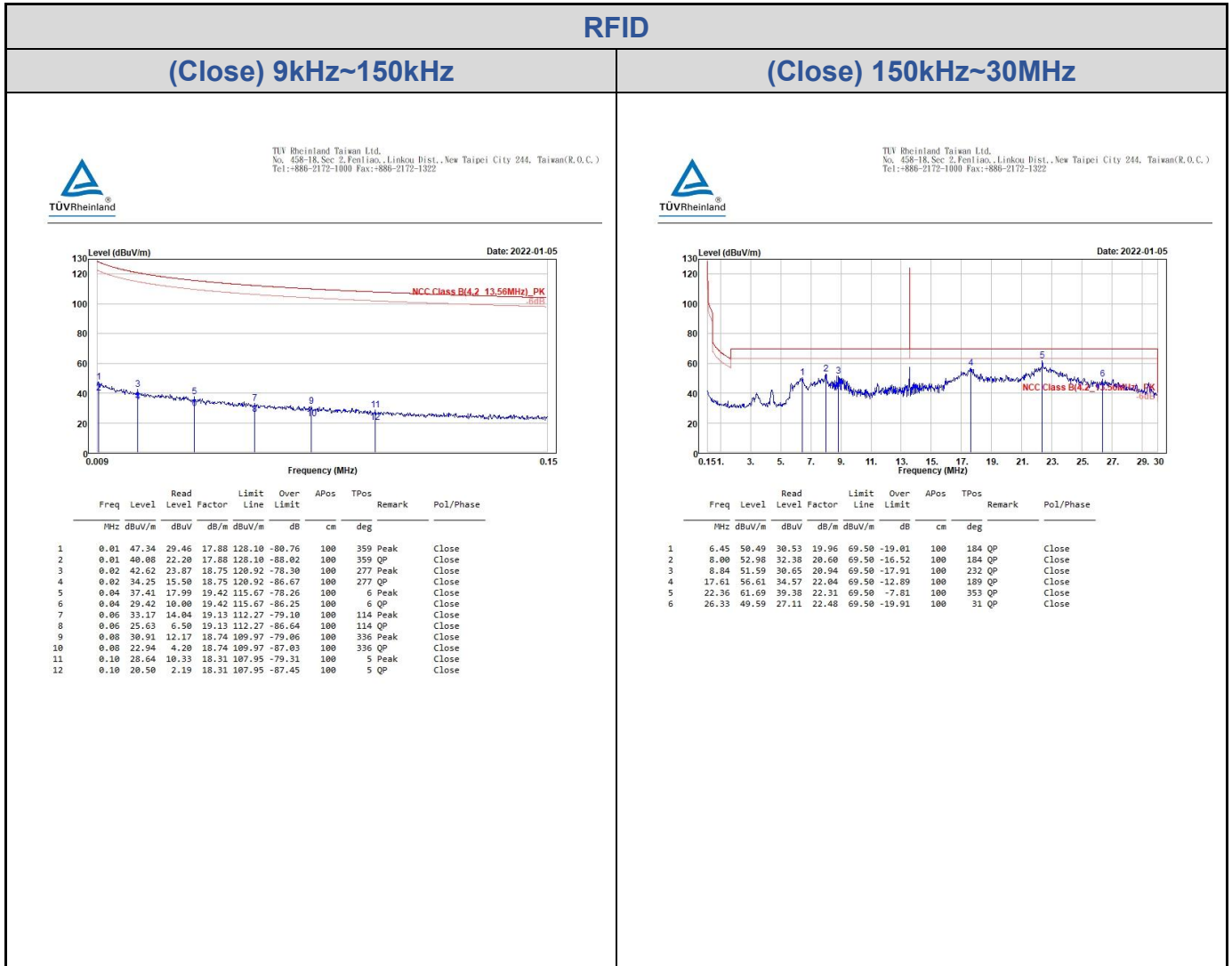
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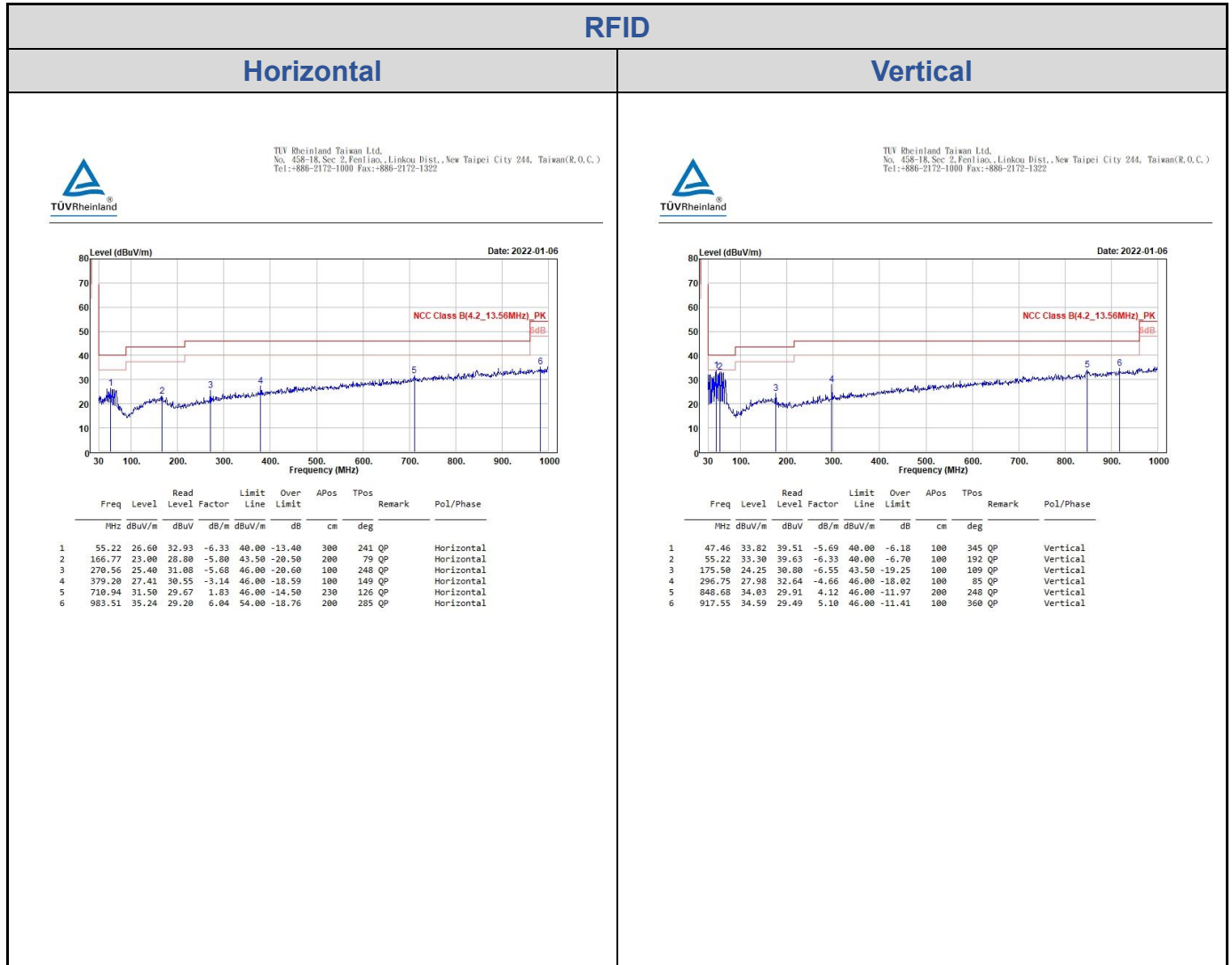
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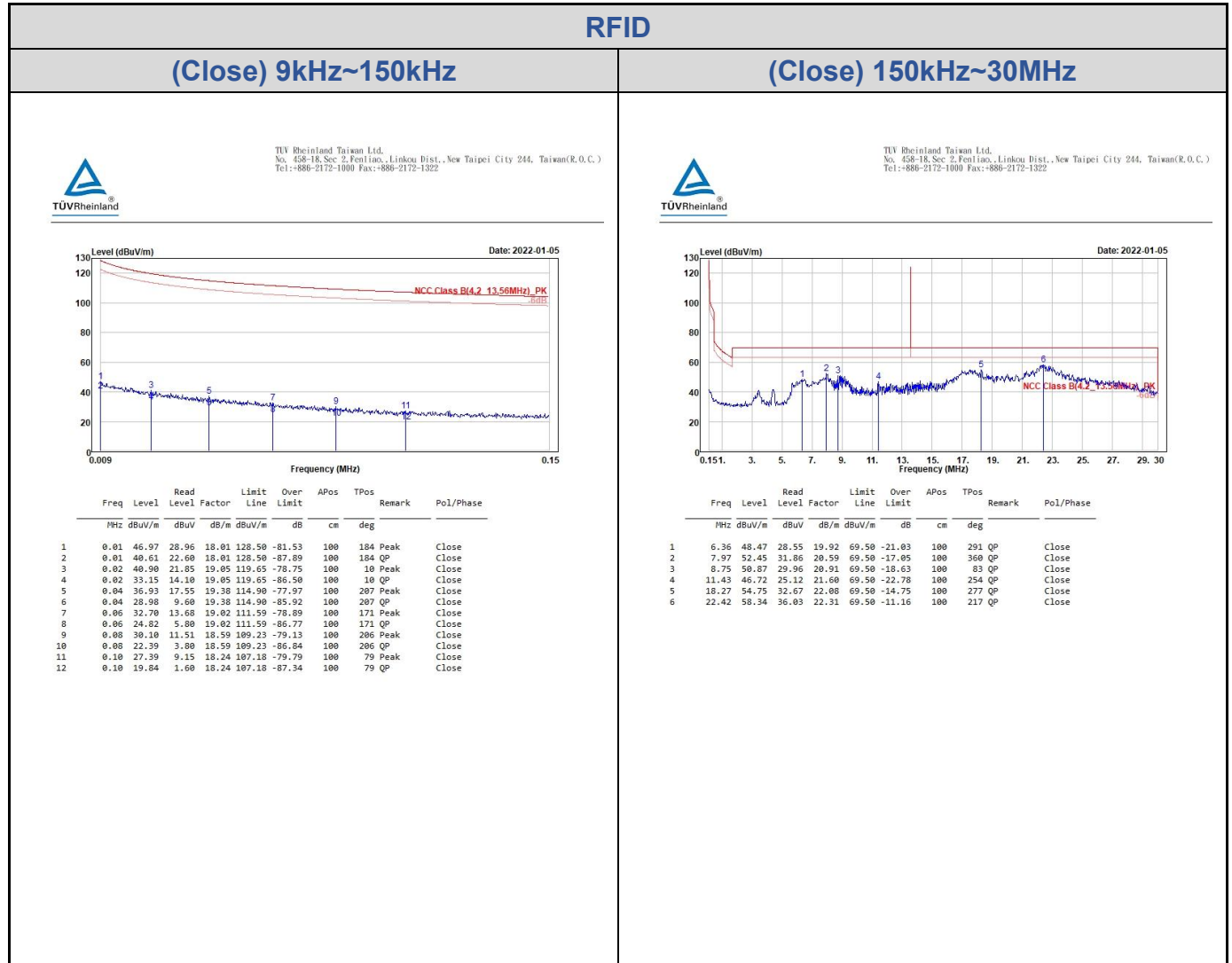
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	MHz	dBuV/m	Level Factor	Line	Limit	cm	deg		
1	13.55	50.19	28.44	21.75	69.50	-19.31	100	139 QP	Close
2	13.56	57.17	35.42	21.75	124.00	-66.83	100	106 Peak	Close
3	13.57	53.44	31.69	21.75	124.00	-70.56	100	106 QP	Close

Tx Mode, 9kHz ~ 30MHz


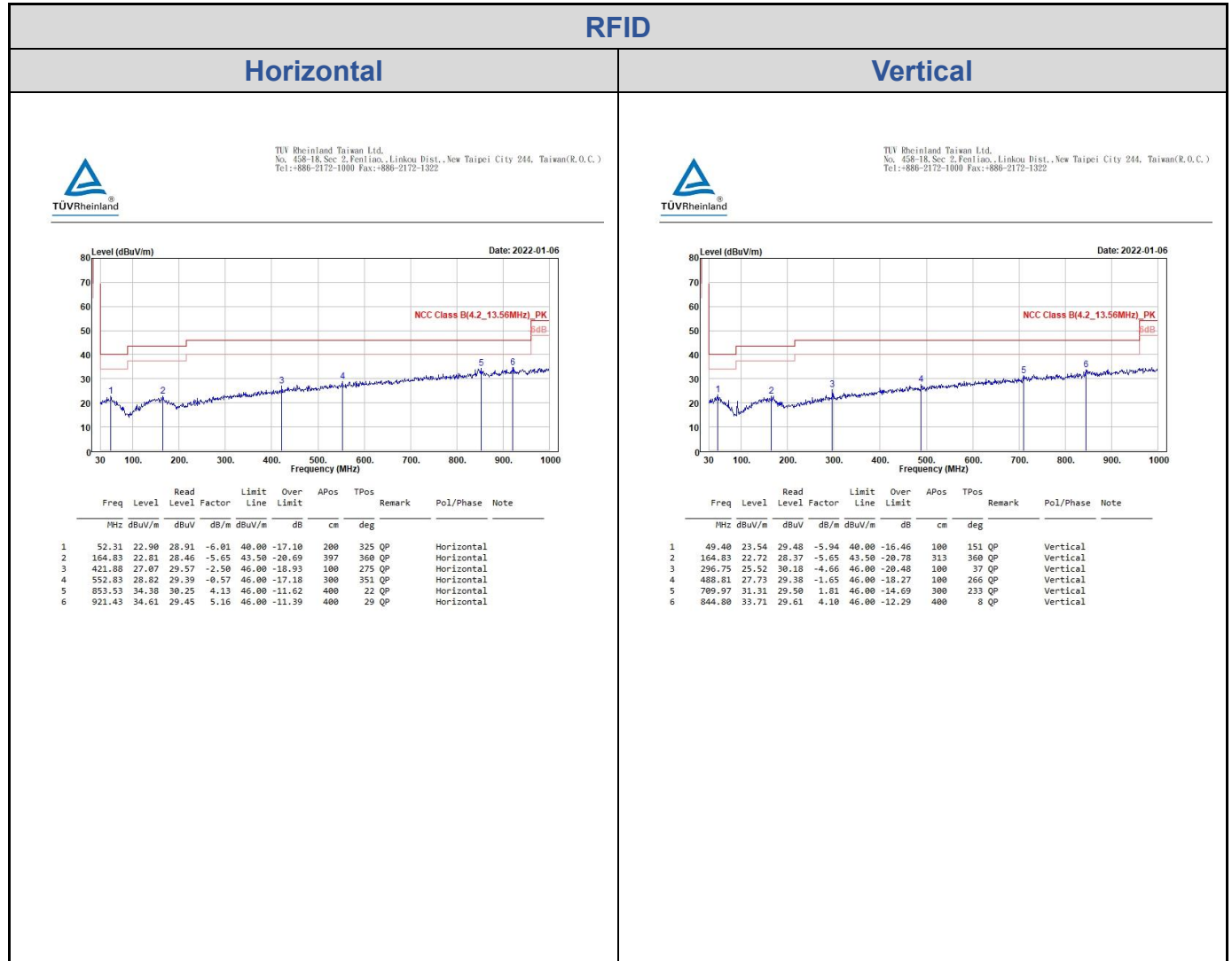
Tx Mode, 30MHz ~ 1GHz



Rx Mode, 9kHz ~ 30MHz



Rx Mode, 30MHz ~ 1GHz



Mains Conducted Emission, 150kHz ~ 30MHz

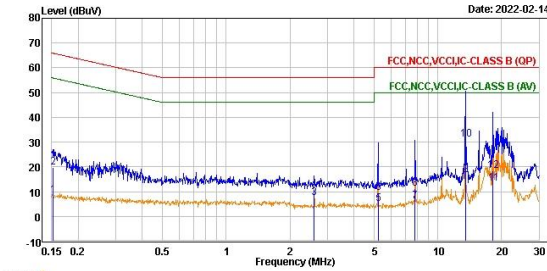
Worst Band

(Line)

(Neutral)



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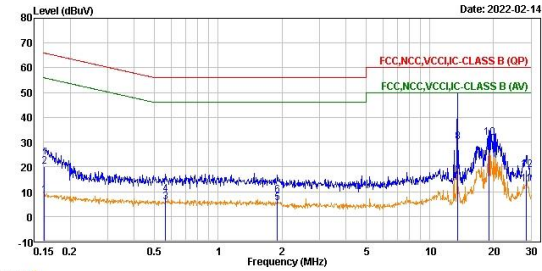


Trace: 1

	Freq	Level	Read	Limit	Over			
	MHz	dBuV	Level Factor	Line	Limit	Remark	Pol/Phase	Note
	MHz	dBuV	dB	dBuV	dB			
1	0.15	8.54	-1.15	9.69	55.92	-47.38 Average	line1	
2	0.15	19.83	10.14	9.69	65.92	-46.09 QP	line1	
3	2.61	7.43	-2.29	9.72	46.00	-38.57 Average	line1	
4	2.61	10.78	1.06	9.72	56.00	-45.22 QP	line1	
5	5.22	5.00	-4.76	9.76	50.00	-45.00 Average	line1	
6	5.22	9.53	-0.23	9.76	60.00	-50.47 QP	line1	
7	7.81	6.25	-3.54	9.79	50.00	-43.75 Average	line1	
8	7.81	11.11	1.32	9.79	60.00	-48.89 QP	line1	
9	13.51	16.69	6.88	9.81	50.00	-33.31 Average	line1	
10	13.51	30.59	21.12	9.81	60.00	-29.07 QP	line1	
11	18.22	13.18	3.36	9.82	50.00	-36.82 Average	line1	
12	18.22	18.51	8.69	9.82	60.00	-41.49 QP	line1	



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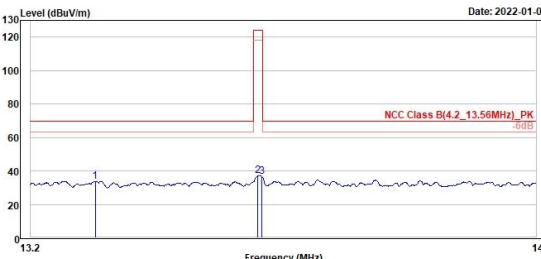
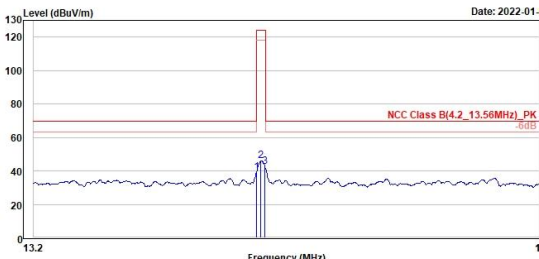
Trace: 1

	Freq	Level	Read	Limit	Over			
	MHz	dBuV	Level Factor	Line	Limit	Remark	Pol/Phase	Note
	MHz	dBuV	dB	dBuV	dB			
1	0.15	8.46	-1.21	9.67	55.96	-47.50 Average	neutral	
2	0.15	20.13	10.46	9.67	65.96	-45.83 QP	neutral	
3	0.56	5.90	-3.76	9.66	46.00	-40.10 Average	neutral	
4	0.56	8.88	-0.78	9.66	56.00	-47.12 QP	neutral	
5	1.91	5.41	-4.28	9.69	46.00	-40.59 Average	neutral	
6	1.91	8.41	-1.28	9.69	56.00	-47.59 QP	neutral	
7	13.51	16.09	6.26	9.83	50.00	-33.91 Average	neutral	
8	13.51	30.19	20.36	9.83	60.00	-29.81 QP	neutral	
9	18.97	25.56	15.69	9.87	50.00	-24.44 Average	neutral	
10	18.97	31.92	22.05	9.87	60.00	-26.06 QP	neutral	
11	28.54	12.93	3.05	9.88	50.00	-37.07 Average	neutral	
12	28.54	18.72	8.84	9.88	60.00	-41.28 QP	neutral	

Test Results of Radiated Spurious Emissions & Mains Conducted

Emission Test _ DTI434

Fundamental

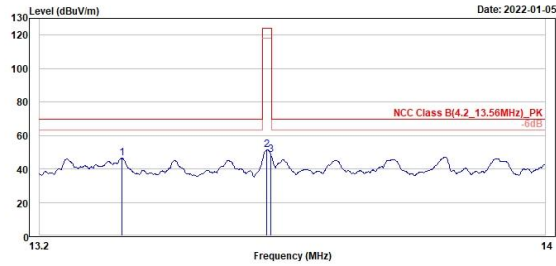
RFID																																																																																																																																		
Grounding					(Open)																																																																																																																													
 TUV Rheinland Taiwan Ltd. No. 458-18, Sec 2, Fenliao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.) Tel: +886-2172-1000 Fax: +886-2172-1322					 TUV Rheinland Taiwan Ltd. No. 458-18, Sec 2, Fenliao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.) Tel: +886-2172-1000 Fax: +886-2172-1322																																																																																																																													
Level (dBuV/m) Date: 2022-01-05  Frequency (MHz)					Level (dBuV/m) Date: 2022-01-05  Frequency (MHz)																																																																																																																													
<table><tr><th></th><th>Freq</th><th>Level</th><th>Read</th><th>Level</th><th>Factor</th><th>Limit</th><th>Over</th><th>APos</th><th>TPos</th><th>Remark</th><th>Pol/Phase</th></tr><tr><th></th><th>MHz</th><th>dBuV/m</th><th>dBuV</th><th>dB/m</th><th>dBuV/m</th><th>dB</th><th>dB</th><th>cm</th><th>deg</th><th></th><th></th></tr><tr><td>1</td><td>13.30</td><td>33.73</td><td>12.00</td><td>21.73</td><td>69.50</td><td>-35.77</td><td>100</td><td>316</td><td>Q⁰</td><td>Ground</td><td></td></tr><tr><td>2</td><td>13.56</td><td>37.26</td><td>15.51</td><td>21.75</td><td>124.00</td><td>-86.74</td><td>100</td><td>85</td><td>Peak</td><td>Ground</td><td></td></tr><tr><td>3</td><td>13.57</td><td>36.46</td><td>14.71</td><td>21.75</td><td>124.00</td><td>-87.54</td><td>100</td><td>85</td><td>Q⁰</td><td>Ground</td><td></td></tr></table>						Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase		MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	dB	cm	deg			1	13.30	33.73	12.00	21.73	69.50	-35.77	100	316	Q ⁰	Ground		2	13.56	37.26	15.51	21.75	124.00	-86.74	100	85	Peak	Ground		3	13.57	36.46	14.71	21.75	124.00	-87.54	100	85	Q ⁰	Ground		<table><tr><th></th><th>Freq</th><th>Level</th><th>Read</th><th>Level</th><th>Factor</th><th>Limit</th><th>Over</th><th>APos</th><th>TPos</th><th>Remark</th><th>Pol/Phase</th></tr><tr><th></th><th>MHz</th><th>dBuV/m</th><th>dBuV</th><th>dB/m</th><th>dBuV/m</th><th>dB</th><th>dB</th><th>cm</th><th>deg</th><th></th><th></th></tr><tr><td>1</td><td>13.55</td><td>39.17</td><td>17.42</td><td>21.75</td><td>69.50</td><td>-38.33</td><td>100</td><td>26</td><td>Q⁰</td><td>Open</td><td></td></tr><tr><td>2</td><td>13.56</td><td>45.92</td><td>24.17</td><td>21.75</td><td>124.00</td><td>-78.08</td><td>100</td><td>361</td><td>Peak</td><td>Open</td><td></td></tr><tr><td>3</td><td>13.57</td><td>42.54</td><td>20.79</td><td>21.75</td><td>124.00</td><td>-81.46</td><td>100</td><td>236</td><td>Q⁰</td><td>Open</td><td></td></tr></table>							Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase		MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	dB	cm	deg			1	13.55	39.17	17.42	21.75	69.50	-38.33	100	26	Q ⁰	Open		2	13.56	45.92	24.17	21.75	124.00	-78.08	100	361	Peak	Open		3	13.57	42.54	20.79	21.75	124.00	-81.46	100	236	Q ⁰	Open	
	Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase																																																																																																																							
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	dB	cm	deg																																																																																																																									
1	13.30	33.73	12.00	21.73	69.50	-35.77	100	316	Q ⁰	Ground																																																																																																																								
2	13.56	37.26	15.51	21.75	124.00	-86.74	100	85	Peak	Ground																																																																																																																								
3	13.57	36.46	14.71	21.75	124.00	-87.54	100	85	Q ⁰	Ground																																																																																																																								
	Freq	Level	Read	Level	Factor	Limit	Over	APos	TPos	Remark	Pol/Phase																																																																																																																							
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	dB	cm	deg																																																																																																																									
1	13.55	39.17	17.42	21.75	69.50	-38.33	100	26	Q ⁰	Open																																																																																																																								
2	13.56	45.92	24.17	21.75	124.00	-78.08	100	361	Peak	Open																																																																																																																								
3	13.57	42.54	20.79	21.75	124.00	-81.46	100	236	Q ⁰	Open																																																																																																																								

RFID

(Close)

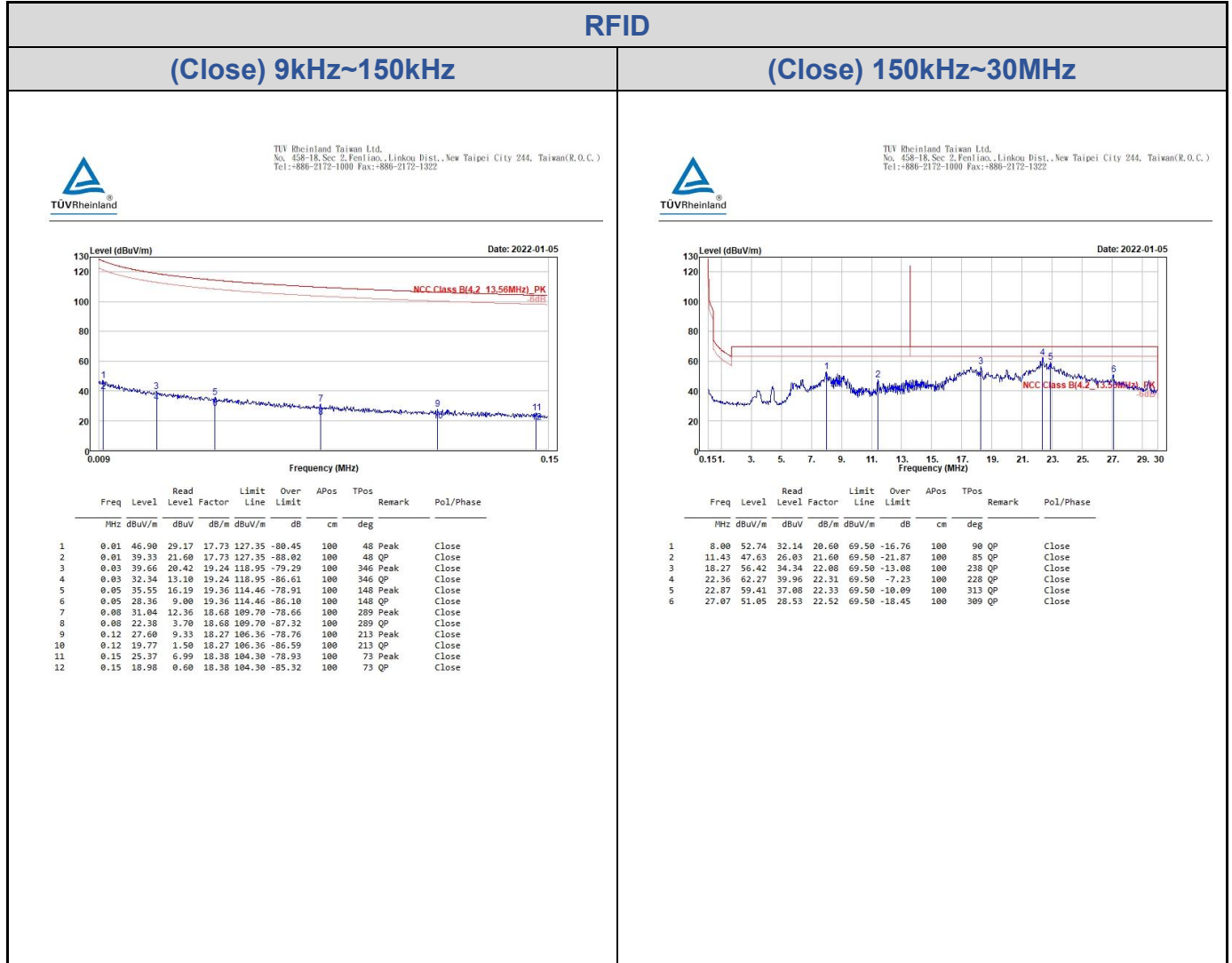


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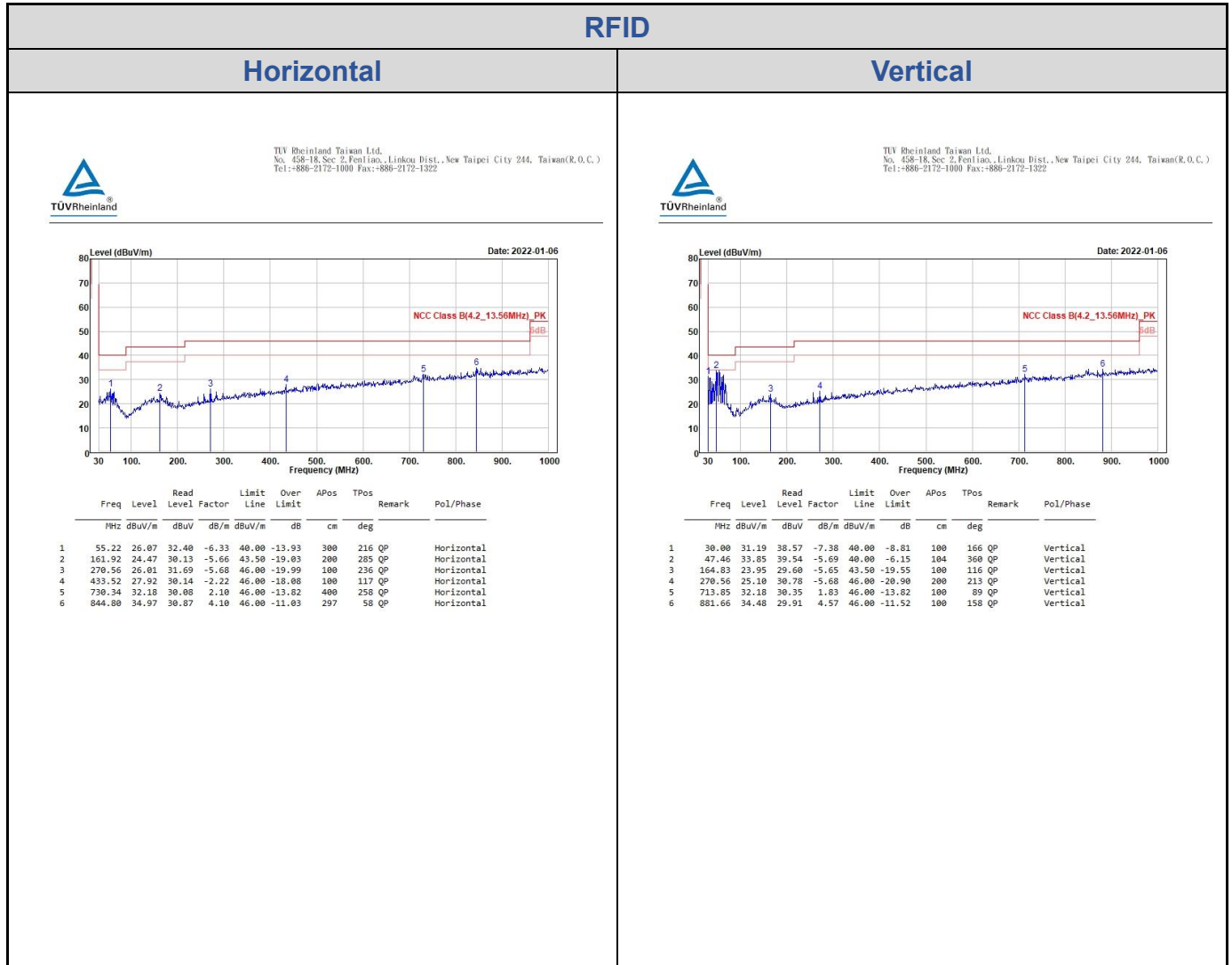


	Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase
	MHz	dBuV/m	Factor	Line	Limit	dB	cm	deg	
1	13.33	46.34	24.61	21.73	69.58	-23.16	100	296 QP	Close
2	13.56	51.55	29.88	21.75	124.08	-72.45	100	137 Peak	Close
3	13.57	48.24	26.49	21.75	124.08	-75.76	100	141 QP	Close

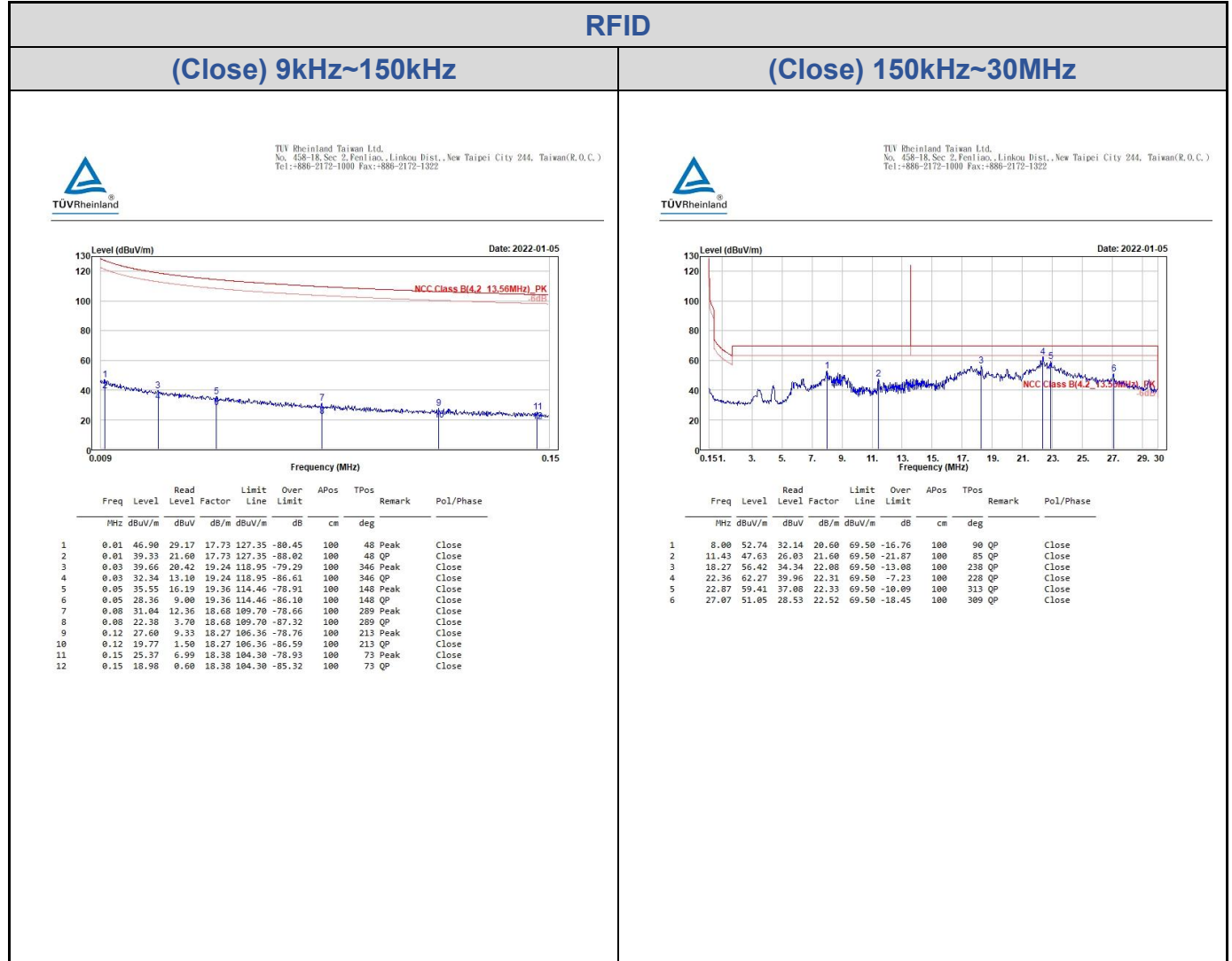
Tx Mode, 9kHz ~ 30MHz



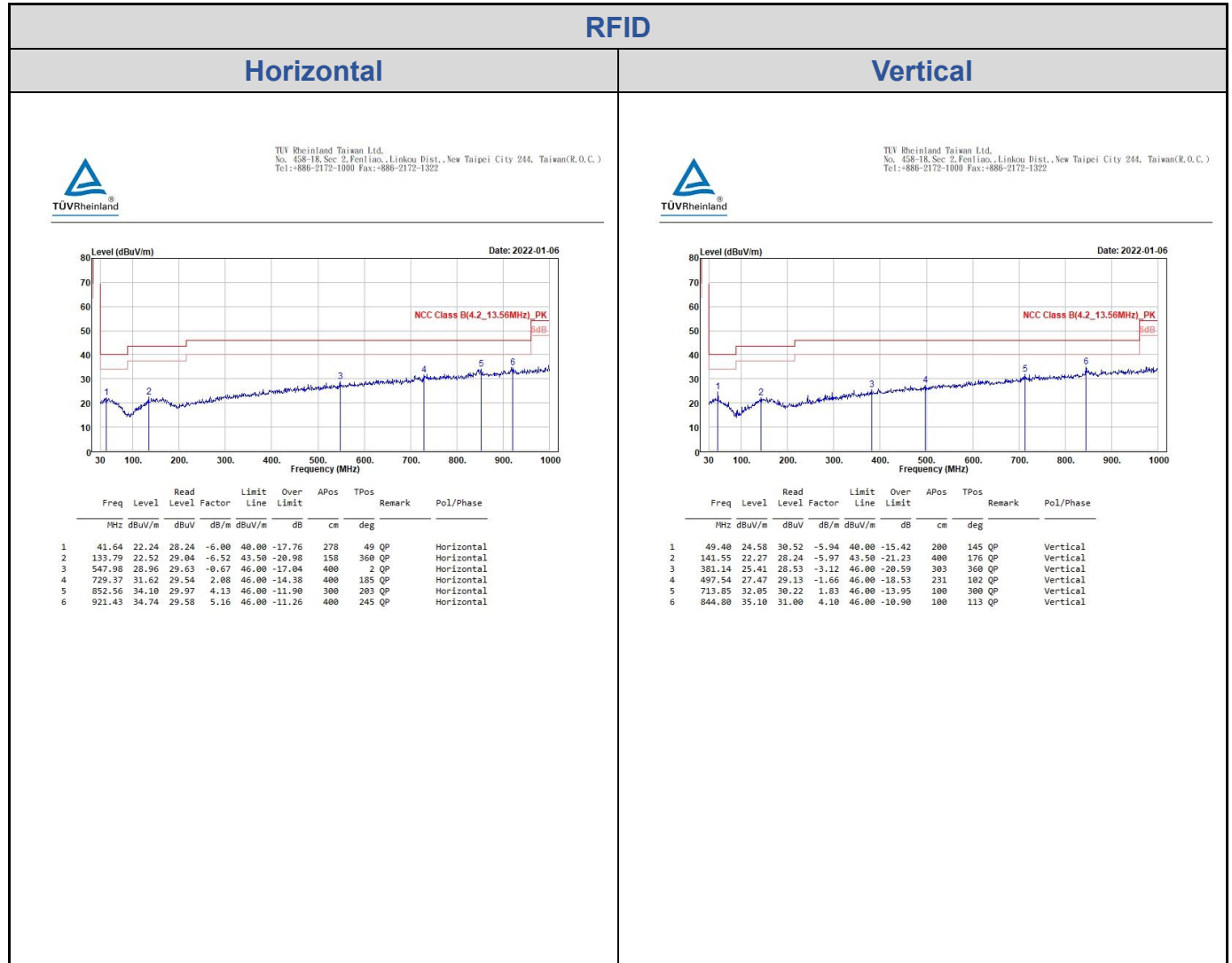
Tx Mode, 30MHz ~ 1GHz



Rx Mode, 9kHz ~ 30MHz



Rx Mode, 30MHz ~ 1GHz



Mains Conducted Emission, 150kHz ~ 30MHz

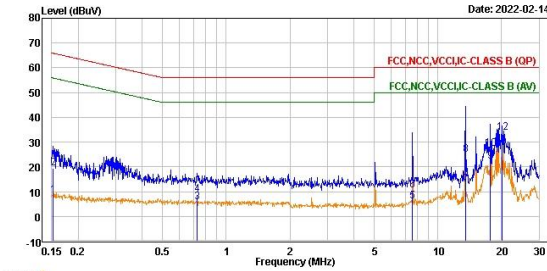
Worst Band

(Line)

(Neutral)



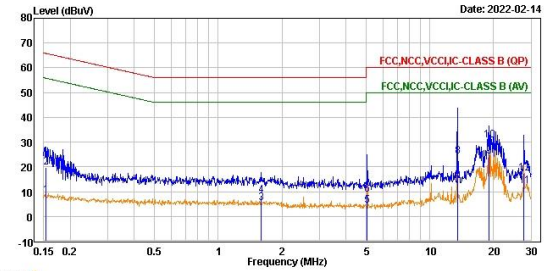
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Trace: 1	Freq	Level	Read	Level	Factor	Limit	Over	Remark	Pol/Phase	Note
	MHz	dBuV	dBuV	dB		dBuV	dB			
1	0.15	8.32	-1.37	9.69	55.88	-47.56	Average	line1		
2	0.15	19.29	9.60	9.69	65.88	-46.59	QP	line1		
3	0.73	5.78	-3.91	9.69	46.00	-40.22	Average	line1		
4	0.73	8.82	-0.87	9.69	56.00	-47.18	QP	line1		
5	7.58	5.97	-3.82	9.79	50.00	-44.03	Average	line1		
6	7.58	10.53	0.74	9.79	60.00	-49.47	QP	line1		
7	13.51	12.93	3.12	9.81	50.00	-37.07	Average	line1		
8	13.51	24.97	15.16	9.81	60.00	-35.03	QP	line1		
9	17.69	22.33	12.51	9.82	50.00	-27.67	Average	line1		
10	17.69	27.27	17.45	9.82	60.00	-32.73	QP	line1		
11	20.03	28.91	19.10	9.81	50.00	-21.09	Average	line1		
12	20.03	33.70	23.89	9.81	60.00	-26.30	QP	line1		



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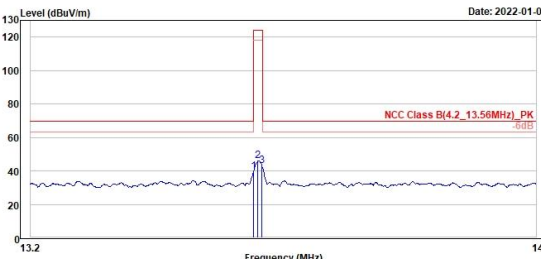
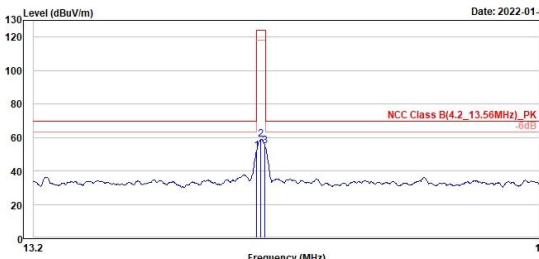


Trace: 1	Freq	Level	Read	Level	Factor	Limit	Over	Remark	Pol/Phase	Note
	MHz	dBuV	dBuV	dB		dBuV	dB			
1	0.15	8.48	-1.19	9.67	55.83	-47.35	Average	neutral		
2	0.15	19.84	10.17	9.67	65.83	-45.99	QP	neutral		
3	1.60	5.54	-4.14	9.68	46.00	-40.46	Average	neutral		
4	1.60	8.57	-1.11	9.68	56.00	-47.43	QP	neutral		
5	5.06	4.30	-5.44	9.74	50.00	-45.70	Average	neutral		
6	5.06	8.88	-0.86	9.74	60.00	-51.12	QP	neutral		
7	13.51	12.27	2.44	9.83	50.00	-37.73	Average	neutral		
8	13.51	24.19	14.36	9.83	60.00	-35.81	QP	neutral		
9	18.97	24.14	14.27	9.87	50.00	-25.86	Average	neutral		
10	18.97	30.67	21.00	9.87	60.00	-29.13	QP	neutral		
11	27.84	12.14	2.26	9.88	50.00	-37.86	Average	neutral		
12	27.84	17.53	7.65	9.88	60.00	-42.47	QP	neutral		

Test Results of Radiated Spurious Emissions & Mains Conducted

Emission Test _ DTI435

Fundamental

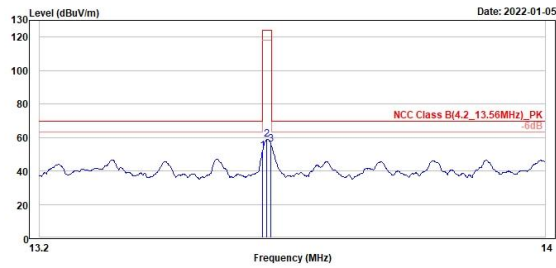
RFID																																																																																																																								
Grounding					(Open)																																																																																																																			
 TUV Rheinland Taiwan Ltd. No. 458-18, Sec 2, Fenliao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.) Tel: +886-2172-1000 Fax: +886-2172-1322					 TUV Rheinland Taiwan Ltd. No. 458-18, Sec 2, Fenliao, Linkou Dist., New Taipei City 244, Taiwan(R.O.C.) Tel: +886-2172-1000 Fax: +886-2172-1322																																																																																																																			
Level (dBuV/m) Date: 2022-01-05 					Level (dBuV/m) Date: 2022-01-05 																																																																																																																			
<table><tr><th></th><th>Freq</th><th>Level</th><th>Read Level</th><th>Factor</th><th>Limit Line</th><th>Over Limit</th><th>APos</th><th>TPos</th><th>Remark</th><th>Pol/Phase</th></tr><tr><th></th><th>MHz</th><th>dBuV/m</th><th>dBuV</th><th>dB/m</th><th>dBuV/m</th><th>dB</th><th>cm</th><th>deg</th><th></th><th></th></tr><tr><td>1</td><td>13.55</td><td>39.30</td><td>17.55</td><td>21.75</td><td>69.50</td><td>-30.20</td><td>100</td><td>202</td><td>Q⁰</td><td>Ground</td></tr><tr><td>2</td><td>13.56</td><td>46.01</td><td>24.26</td><td>21.75</td><td>124.00</td><td>-77.99</td><td>100</td><td>200</td><td>Peak</td><td>Ground</td></tr><tr><td>3</td><td>13.57</td><td>43.15</td><td>21.40</td><td>21.75</td><td>124.00</td><td>-60.85</td><td>100</td><td>200</td><td>Q⁰</td><td>Ground</td></tr></table>						Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase		MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			1	13.55	39.30	17.55	21.75	69.50	-30.20	100	202	Q ⁰	Ground	2	13.56	46.01	24.26	21.75	124.00	-77.99	100	200	Peak	Ground	3	13.57	43.15	21.40	21.75	124.00	-60.85	100	200	Q ⁰	Ground	<table><tr><th></th><th>Freq</th><th>Level</th><th>Read Level</th><th>Factor</th><th>Limit Line</th><th>Over Limit</th><th>APos</th><th>TPos</th><th>Remark</th><th>Pol/Phase</th></tr><tr><th></th><th>MHz</th><th>dBuV/m</th><th>dBuV</th><th>dB/m</th><th>dBuV/m</th><th>dB</th><th>cm</th><th>deg</th><th></th><th></th></tr><tr><td>1</td><td>13.55</td><td>51.84</td><td>30.09</td><td>21.75</td><td>69.50</td><td>-17.66</td><td>100</td><td>3</td><td>Q⁰</td><td>Open</td></tr><tr><td>2</td><td>13.56</td><td>58.90</td><td>37.15</td><td>21.75</td><td>124.00</td><td>-65.10</td><td>100</td><td>172</td><td>Peak</td><td>Open</td></tr><tr><td>3</td><td>13.57</td><td>55.10</td><td>33.35</td><td>21.75</td><td>124.00</td><td>-60.90</td><td>100</td><td>63</td><td>Q⁰</td><td>Open</td></tr></table>							Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase		MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg			1	13.55	51.84	30.09	21.75	69.50	-17.66	100	3	Q ⁰	Open	2	13.56	58.90	37.15	21.75	124.00	-65.10	100	172	Peak	Open	3	13.57	55.10	33.35	21.75	124.00	-60.90	100	63	Q ⁰	Open
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase																																																																																																														
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg																																																																																																																
1	13.55	39.30	17.55	21.75	69.50	-30.20	100	202	Q ⁰	Ground																																																																																																														
2	13.56	46.01	24.26	21.75	124.00	-77.99	100	200	Peak	Ground																																																																																																														
3	13.57	43.15	21.40	21.75	124.00	-60.85	100	200	Q ⁰	Ground																																																																																																														
	Freq	Level	Read Level	Factor	Limit Line	Over Limit	APos	TPos	Remark	Pol/Phase																																																																																																														
	MHz	dBuV/m	dBuV	dB/m	dBuV/m	dB	cm	deg																																																																																																																
1	13.55	51.84	30.09	21.75	69.50	-17.66	100	3	Q ⁰	Open																																																																																																														
2	13.56	58.90	37.15	21.75	124.00	-65.10	100	172	Peak	Open																																																																																																														
3	13.57	55.10	33.35	21.75	124.00	-60.90	100	63	Q ⁰	Open																																																																																																														

RFID

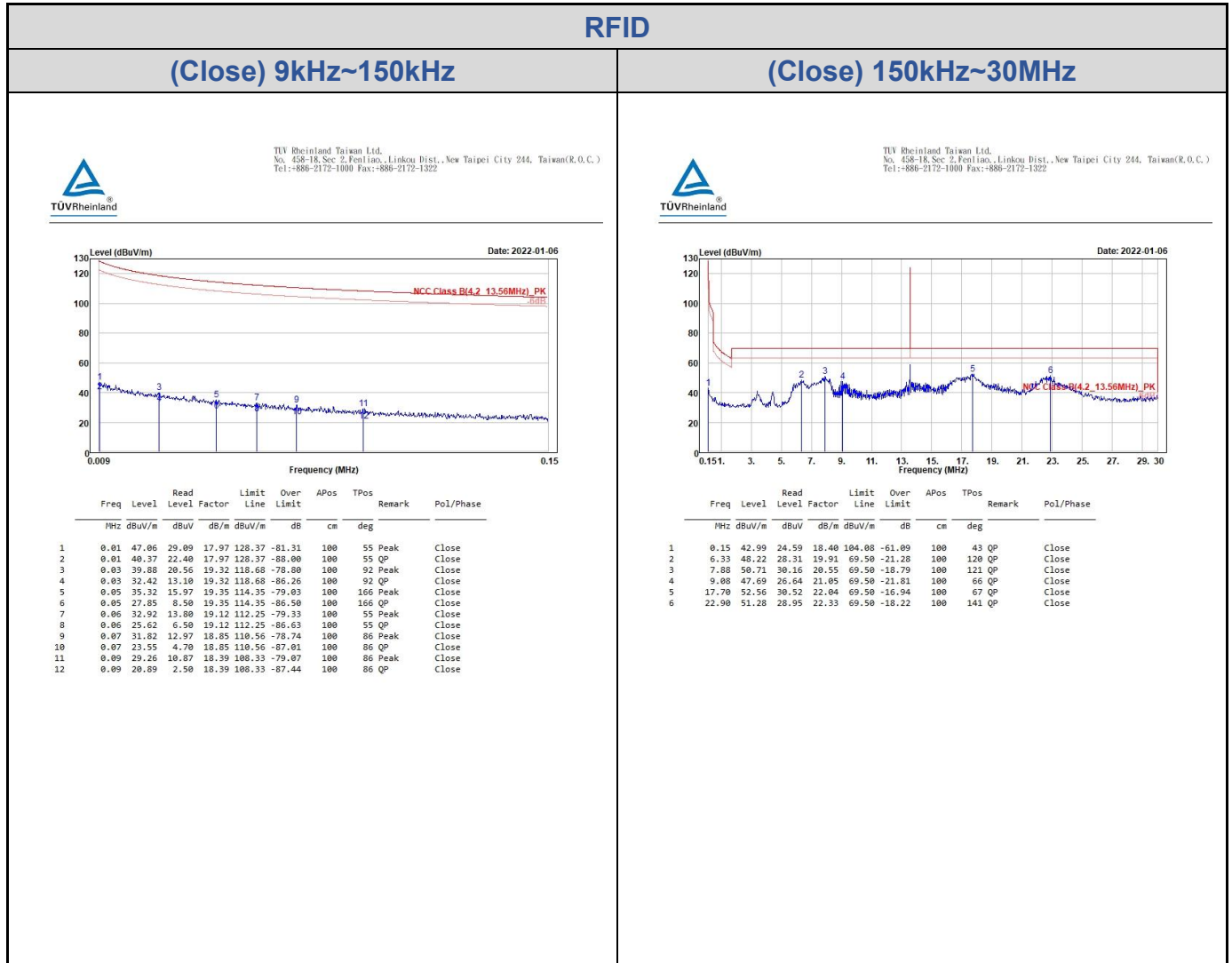
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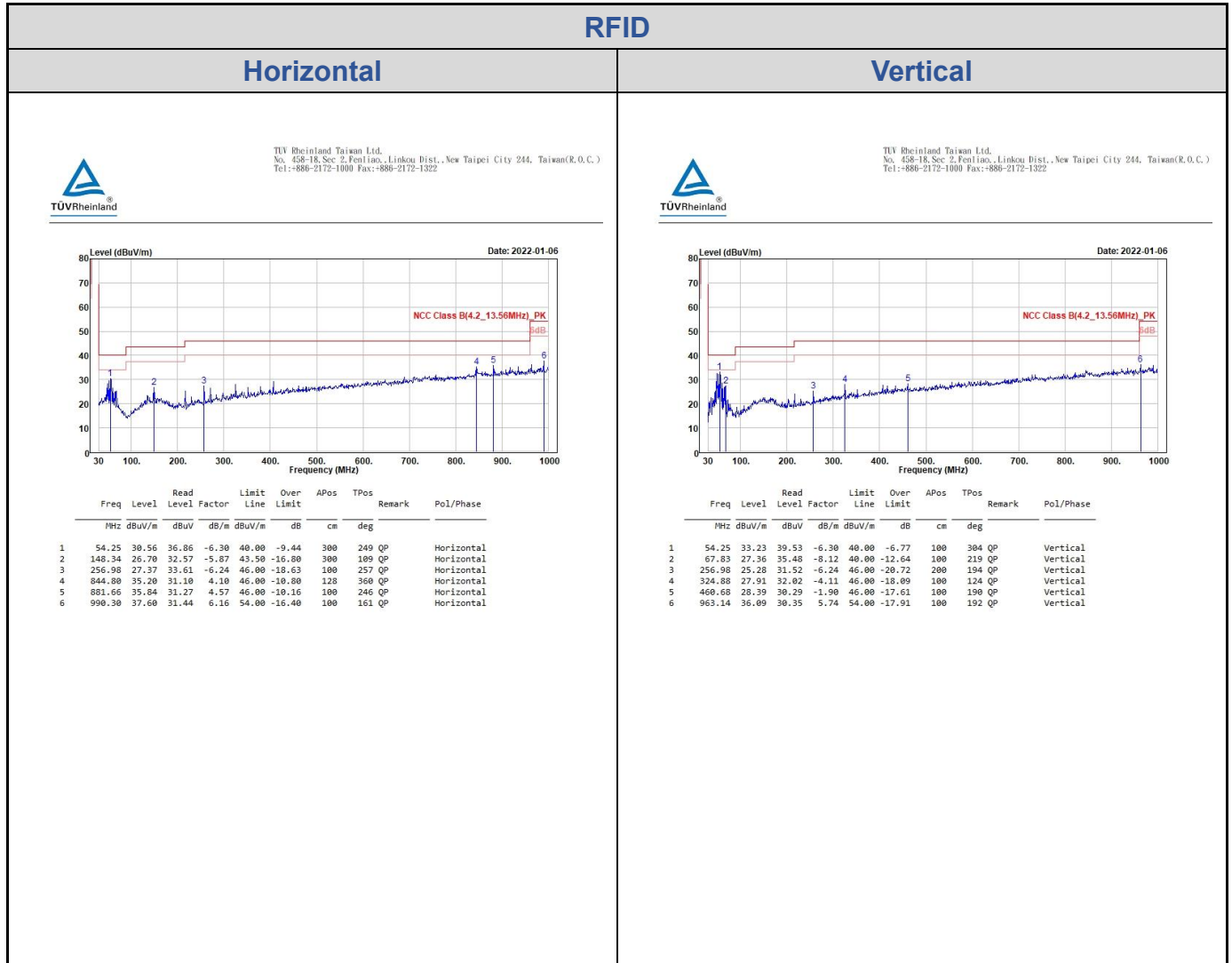
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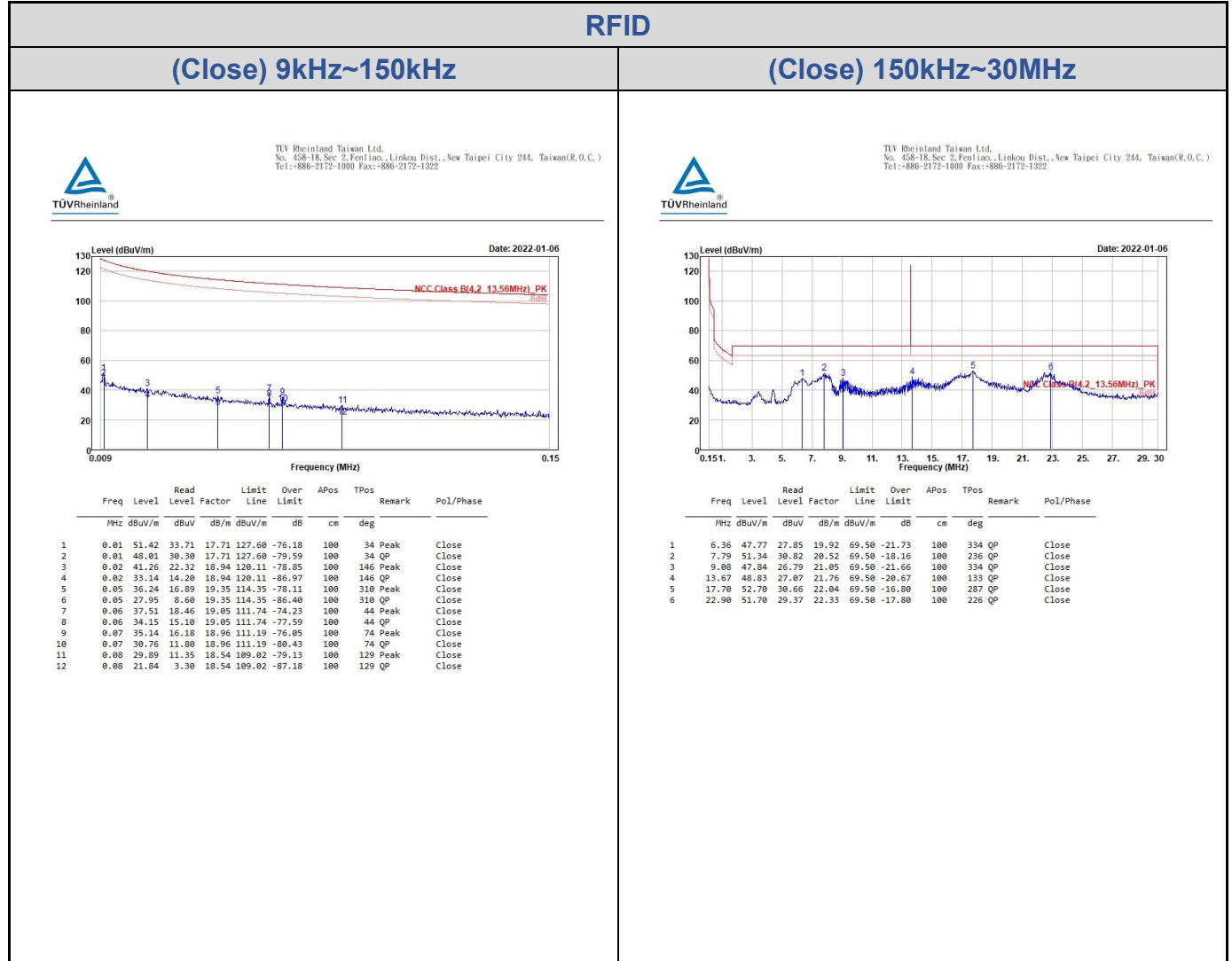
	Freq	Level	Read	Limit	Over	APos	TPos	Remark	Pol/Phase
	MHz	dBuV/m	Factor	Line	Limit	dB	cm	deg	
1	13.55	51.84	30.09	21.75	69.50	-17.66	100	98 QP	Close
2	13.56	59.06	37.31	21.75	124.00	-64.94	100	94 Peak	Close
3	13.57	55.02	34.07	21.75	124.00	-68.18	100	94 QP	Close

Tx Mode, 9kHz ~ 30MHz


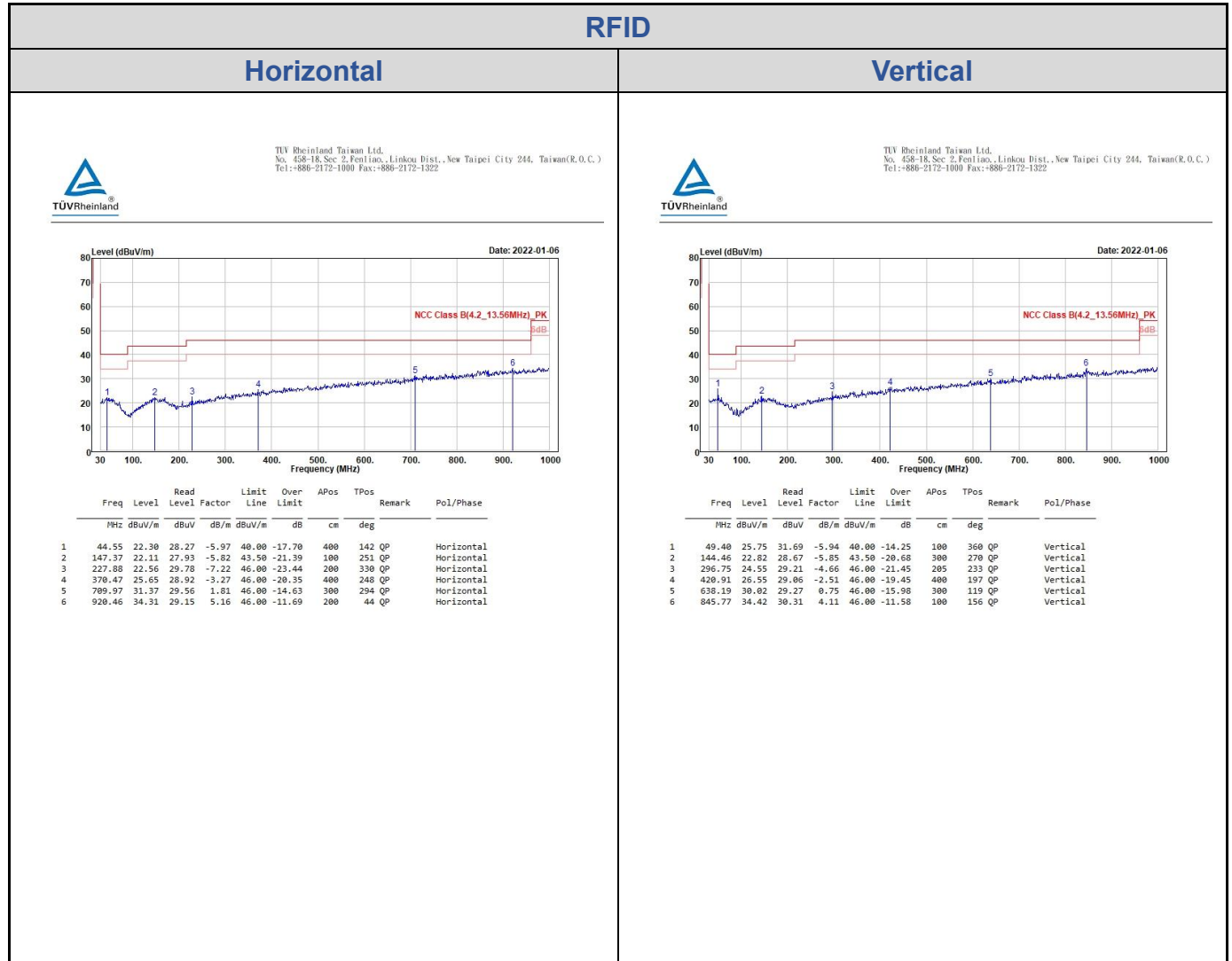
Tx Mode, 30MHz ~ 1GHz



Rx Mode, 9kHz ~ 30MHz



Rx Mode, 30MHz ~ 1GHz



Mains Conducted Emission, 150kHz ~ 30MHz

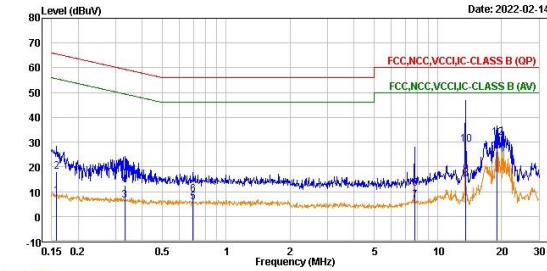
Worst Band

(Line)

(Neutral)



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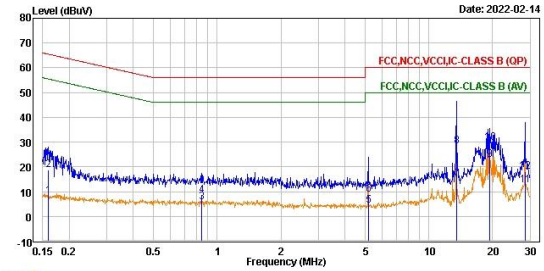


Trace: 1

	Freq	Level	Read	Level	Factor	Limit	Over		Pol/Phase	Note
	MHz	dBuV	dBuV	dB		dBuV	dB			
1	0.16	8.30	-1.39	9.69	55.54	-47.24	Average	line1		
2	0.16	18.18	8.49	9.69	65.54	-47.36	QP	line1		
3	0.33	6.59	-3.08	9.67	49.42	-42.83	Average	line1		
4	0.33	12.47	2.80	9.67	59.42	-46.95	QP	line1		
5	0.70	5.76	-3.93	9.69	46.00	-40.24	Average	line1		
6	0.70	8.74	-0.95	9.69	56.00	-47.26	QP	line1		
7	7.77	6.56	-3.23	9.79	50.00	-43.44	Average	line1		
8	7.77	11.31	1.52	9.79	60.00	-48.69	QP	line1		
9	13.51	15.46	5.65	9.81	50.00	-34.54	Average	line1		
10	13.51	29.18	19.37	9.81	60.00	-30.82	QP	line1		
11	18.97	26.21	16.40	9.81	50.00	-23.79	Average	line1		
12	18.97	31.76	21.95	9.81	60.00	-28.24	QP	line1		



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Trace: 1

	Freq	Level	Read	Level	Factor	Limit	Over		Pol/Phase	Note
	MHz	dBuV	dBuV	dB		dBuV	dB			
1	0.16	8.29	-1.38	9.67	55.50	-47.21	Average	neutral		
2	0.16	18.59	8.92	9.67	65.50	-46.91	QP	neutral		
3	0.33	5.74	-3.92	9.66	46.00	-40.26	Average	neutral		
4	0.33	8.63	-1.03	9.66	56.00	-47.37	QP	neutral		
5	0.70	4.41	-5.33	9.74	50.00	-45.59	Average	neutral		
6	0.70	8.88	-0.86	9.74	60.00	-51.12	QP	neutral		
7	7.77	14.87	5.04	9.83	50.00	-35.13	Average	neutral		
8	7.77	28.44	18.61	9.83	60.00	-31.56	QP	neutral		
9	13.51	22.71	12.84	9.87	50.00	-27.29	Average	neutral		
10	13.51	29.54	19.67	9.87	60.00	-30.46	QP	neutral		
11	18.40	12.47	2.59	9.88	50.00	-37.53	Average	neutral		
12	18.40	18.16	8.28	9.88	60.00	-41.84	QP	neutral		